Memorandum

BURNS McDONNELL

EAST KENTUCKY POWER COOPERATIVE

September 9, 2024

Mr. Brad Young, P.E.
East Kentucky Power Cooperative
4775 Lexington Road
Winchester, KY 40391

Re: EKPC New Generation Project Feasibility Report and Alternatives Analyses

Dear Mr. Young:

East Kentucky Power Cooperative (EKPC) requested Burns & McDonnell Engineering Co. (BMcD) review the feasibility of adding several new generation facilities across multiple potential site locations in Kentucky. As part of this effort, BMcD held multiple scope discussion meetings to review equipment assumptions, facility sizing and technology considerations, site locations and layout concerns, and developed preliminary scopes for each generation option. BMcD then developed short-form specifications for the major equipment in several technologies and solicited budgetary bids from these technology providers to help develop approximate project scope, schedules, and cost estimates. Additionally, BMcD requested sufficient technical data from the major equipment suppliers to support EKPC with initiating PJM/Interconnection Request, Public Service Commission application, and other upfront activities as defined by the schedule. A brief description of each generation facility type and what was reviewed is described below.

New Generation Facility Options

As part of the project feasibility report (PFR), EKPC requested BMcD review the following new generation options at various potential project sites:

- Reciprocating Internal Combustion Engines (RICE)
- Combined Cycle Gas Turbine (CCGT) Generation Facilities
- Simple Cycle Gas Turbine (SCGT) Generation Facilities

BMcD also evaluated other generation options which are summarized in separate reports. These include coal-to-gas conversion at multiple project sites, nuclear generation, synchronous condenser, and solar generation.

Multiple site locations were considered for each option based on projected future generation demand, relative proximity to existing transmission lines and natural gas pipelines, as well as minimizing land acquisition and additional permitting from greenfield sites. A brief explanation of each option is described below.

RICE Facility Options

EKPC reviewed multiple potential greenfield site locations in central Kentucky, primarily located around the Campbellsville and Liberty areas. Following a Siting Study BMcD identified which potential locations would minimize project capital cost by co-locating close to both the existing high voltage

transmission lines and natural gas pipelines in the area. For the more favorable site locations, BMcD developed preliminary general arrangements (GA's) and initiated a feasibility analysis while in parallel EKPC reviewed existing land parcel ownership resell opportunities. In BMcD's feasibility analysis, each parcel was reviewed for sufficient land area for the new RICE facility, water availability, noise sensitivity, adjacent property owner's residence or community gathering locations (e.g. places of worship), voltage support advantages, wetlands and other potential regulatory hurdles. Although some parcels were more favorable than others, most existing landowners were not open to resell which left three potential parcels close to Liberty (Liberty 3, Liberty 4, Liberty 5) and one potential parcel located close to Campbellsville (Campbellsville 6). Of these options, both the Liberty 3 and Campbellsville 6 properties were deemed technically acceptable due to the closer proximity of gas pipelines and the existing 161 kV transmission line.

On the Campbellsville 6 site, due to the way natural gas pipelines cross the property, insufficient suitable land space is available without either removing trees (which will impact environmental permitting) or locating the facility close to adjacent dwellings (at the northwest corner of the parcel) that increases the likelihood of noise concerns. Therefore, it was determined that rerouting one of the existing pipelines would be required. BMcD engaged the gas pipeline owner/operatorto review the potential for rerouting one of the existing pipelines and to determine pipeline easement requirements. The Campbellsville 6 overall site plan illustrates the final agreed-to facility location and associated pipeline easements.

Minimal transmission work would be needed for the Campbellsville 6 site. An existing EKPC 161 kV line is in close proximity to the site; therefore, a new substation would be built with short connections from that existing 161 kV line to the new substation. Additionally, power-flow analysis modeling this generation addition indicates that potential transmission-system network upgrades required would be relatively minor in scope and cost. The disadvantage of this site from a transmission perspective is that it is geographically further from the southern portion of EKPC's system, which requires more generation support than the Campbellsville area during high-load periods.

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A moderate level of transmission work would be needed for this site. An existing EKPC 161 kV line is in close proximity to the site; therefore, a new substation would be built with short connections from that existing 161 kV line to the new substation. Additionally, power-flow analysis modeling this generation addition indicates a small number of transmission-system network upgrades that could be required – most of these would be small scope projects. The most significant project required would be a rebuild of the existing 161 kV line from the new substation at the Liberty 3 site to the existing Liberty Junction

substation (a distance of approximately 8 miles). The advantage of this site from a transmission perspective is that it is geographically in the southern portion of EKPC's system, and thereby can provide more support to the transmission system when needed during high-load periods.

EKPC desired a minimum of 214 MW of net new generation produced by this RICE facility. Existing RICE manufacturers include Wartsila, Caterpillar, GE/Jenbacher, MAN, and Hyundai Heavy Industries. To achieve the desired 214 MW with less machines, it was recommended to focus on 18 MW or larger engines for this feasibility effort. Of the manufacturers, only Wartsila and MAN produce 18 MW or larger engines. BMcD engaged with both manufacturers and provided a shortform technical specification to request sufficient technical data to initiate a PJM Interconnect application, as well as budgetary costs and lead times to further develop the project feasibility. BMcD used the vendor-supplied conceptual information (along with past project experience) to develop the PFR deliverables such as the site general arrangement, scope matrix (Appendix B), equipment list (Appendix D), one-line diagrams (Appendix E), performance and emissions estimates (Appendix G), project schedule (Appendix F) and cost estimate (Appendix H). Note that because RICE facilities do not require much water use, once it was confirmed a city supply would be available, a detailed water mass balance was determined to be unnecessary for this stage of the project.

BMcD used the preliminary equipment sizing, layout, and spacing requirements from each manufacturer (including electrical and control room sizing requirements) to develop the overall site general arrangement. EKPC indicated they wanted a majority of the equipment located indoors to minimize potential freezing and cold weather concerns. They also determined that the facility needed to be dual fuel capable. Each engine shall run on either natural gas or ultra-low sulfur diesel (ULSD) No.2 fuel oil to provide flexibility and redundancy should the primary fuel (natural gas) supply get curtailed by the gas company. In addition to the natural gas supply and conditioning equipment, 72 hours-worth of ULSD No.2 fuel oil will be stored in two tanks located onsite near the engine hall. The facility will be provided with administrative rooms and a separate warehouse. Because Liberty 3 is a greenfield site, the preliminary layout includes a new guard shack, property fencing, storm water retention pond, both permanent and temporary construction parking, and equipment laydown spaces. It was determined that the new meter and regulation (M&R) station would be placed near the edge of the site to provide unencumbered access by the pipeline company.

Using the preliminary GA and Site Plan and major equipment supplier budgetary cost estimates, BMcD used historical data to estimate the balance of plant (BOP) costs for the rest of the project. These capital costs were included with the other project costs and are included in Appendix H. Likewise, using the major equipment supplier's lead time along with past project historical durations, BMcD developed a preliminary Level 1 project schedule which is provided in Appendix F.

CCGT Generation Facility Options

Similar to the RICE facilities, EKPC reviewed several potential site locations for combined cycle generation plants, including their existing J.K. Smith (Smith) and John Sherman Cooper (Cooper) power stations as well as a few new greenfield locations in eastern Kentucky near and adjacent to the Ohio River (near Tygarts Creek). The Smith and Cooper sites both include a new 2x1 CCGT plant whereas the greenfield site in eastern Kentucky includes a 3x1 CCGT powerplant. The Cooper site would require a

new gas pipeline to deliver natural gas for the new facility. The Smith site already has nine simple cycle units onsite with sufficient excess gas supply and would have the most free space and infrastructure for the new CCGT plant. However, based on economics and sufficiency of water supply, EKPC preferred to locate the CCGT plant at the Cooper facility. The Tygarts Creek area facility was seen as a potential third option behind the other two sites, but additional siting development would be required to further vet this location.

Because of EKPC's experience with F-Class combustion turbine generators (CTG), it was desirable to pursue and add new units to the existing fleet for interchangeability of spare parts and familiarity of design/operation of the combustion turbines. Additionally, EKPC decided against duct firing the new heat recovery steam generators (HRSG) as the expected generation load did not require this extra capacity and for concerns for $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). Based on this direction, the new 2x1 CCGT facility would generate approximately 725 MW (net). Due to the lack of sufficient water availability, the Smith site would require an air-cooled condenser (ACC) whereas the Cooper site is located next to Cumberland Lake and could use a cooling tower and wet surface condenser for cooling. The use of a cooling tower at the Cooper facility was also beneficial due to the decrease in parasitic load of 8-14 MW as opposed to the use of an ACC. The Tygarts Creek location would also likely use wet cooling due to its proximity to the Ohio River. This can be further evaluated if EKPC decides to pursue this location in the future.

In parallel with determining the site location for this 2x1 CCGT facility, BMcD developed short-form technical specifications and issued bid packages to the major equipment suppliers. For F-Class CTG's, this includes Siemens and General Electric (GE). The HRSG's were bid out to Vogt, GE, and Nooter Eriksen. The steam turbine generator (STG) was bid to Siemens, GE, and Toshiba. Using the technical data provided, BMcD was able to approximate expected performance and emissions from each major equipment manufacturer as well as help initiate the PJM Interconnection application and air permit.

As with the RICE facilities, BMcD used the supplied vendor information to create Site Plans and GA's for the two major CTG vendors at several site locations as discussed below:

Smith: The Smith 2x1 CCGT would be located on the site of a previously uncompleted coal plant. This site location was ideal for providing adequate space for all major equipment and included supporting infrastructure for transmission and gas pipeline onsite. Since some foundation and underground utilities were previously installed for the unfinished coal plant, an allowance for demolition of these items was included in the cost estimate.

Significant transmission infrastructure is already in place at Smith. A new 345 kV substation would most likely be required with new transmission-line connections to the existing 345 kV substation. For transmission-system network upgrades, a new 138 kV line from JK Smith to the existing EKPC Fawkes substation in northern Madison County is expected to be needed (estimated line length of approximately 17 miles). Additionally, numerous upgrades of existing transmission lines in the area are expected to be needed based on preliminary power-flow studies. This location provides minimal incremental benefits to the transmission system. The site currently has nine (9) simple-cycle combustion turbines that are

available to provide support to the transmission system in the region, so added generation at this location provides only marginal support beyond what already exists.

Tygarts Creek: This location was reviewed for a potential 3x1 CCGT facility in eastern Kentucky. Several greenfield parcels were reviewed for their close proximity to natural gas pipelines and existing transmission lines. A promising location was identified close to the Ohio River. However, EKPC indicated further development of this location is on hold.

A 765 kV transmission line owned by American Electric Power ("AEP") is in close proximity to this site. The CCGT facility would be connected to this 765 kV line via a new substation in order to integrate the generation facility into PJM. Preliminary power-flow analysis has identified several potential upgrades that could be required on the AEP system due to the new generation interconnection to its 765 kV system. This location would provide no benefits to the EKPC transmission system from a generation-support standpoint. There would be no direct connection to the EKPC system, since the facility would connect only to the AEP 765 kV system as the means to integrate the facility into the PJM market. Therefore, EKPC would not realize any transmission benefits from the facility.

Cooper: This location was favorable since the site houses an existing coal plant and provides substantial existing infrastructure, water and transmission along a corridor that needs voltage support. However, finding sufficient land space for the 2x1 CCGT plant was a challenge. EKPC indicated they were considering moth-balling Unit 1 and retrofitting Unit 2 with a coal-to-gas conversion. With these existing units no longer using coal at some future date uncertain whether by EPA's Greenhouse Gas Rule or Court Stay Motion, EKPC requested BMcD investigate using the land space of the existing coal pile for the new CCGT plant location. EKPC wanted a 10-day coal storage pile to remain for emergencies for Unit 2. To allow the existing smaller coal pile to remain in service, all coal handling support facilities (coal dumper, transfer conveyors, hoppers, etc.) must remain in service. Additionally, a coal pile pond would need to remain to collect coal pile surface runoff and settlement of coal fines prior to pumping to the existing wastewater treatment system as well as for holding excess storm water from the existing plant. Therefore, to best use the available space, it was determined a new smaller coal pond would be designed and located closer to the active storage pile next to Unit 2 so the rest of the coal pile footprint could be reused for the combined cycle facility.

Because Cooper is located in a geographic area with lots of karst formations, understanding subsurface details will be important for further design. Due to a lack of existing subsurface data underneath the active coal pile, it was assumed that a large amount of flowable fill would be required in addition to piling the major equipment and buildings. This allowance was included in the cost estimate. Future subsurface investigation in and around the coal pile will be important to better understand what potential deep foundations would be required.

Significant 161 kV and 69 kV transmission infrastructure currently exists at Cooper. A new 161 kV substation would most likely be required with associated establishment of transmission-line connections to the existing 161 kV substation. Regarding transmission-system network upgrades, a new 161 kV line from Cooper to the existing LG&E/KU Alcalde substation which is southeast of the city of Somerset, Kentucky is expected to be needed (estimated line length of approximately 7 miles). Additionally,

numerous upgrades of existing transmission lines and substation equipment in the area are expected to be needed based on preliminary power-flow studies. The significant advantage of this site from a transmission perspective is that it is geographically in a key area of the southern portion of EKPC's system, and thereby can provide substantial support to the transmission system when needed during high-load periods.

Using the preliminary GA's and Site Plans, and major equipment supplier budgetary cost estimates, BMcD then used historical information from similar projects to estimate the BOP costs for the rest of the project. These capital costs were included with the other project costs and are listed in Appendix H. Likewise, using the major equipment supplier's lead time along with past project historical durations, BMcD developed a preliminary Level 1 project schedule which is provided in Appendix F.

SCGT Generation Facility

EKPC requested BMcD review the feasibility of adding simple cycle gas turbines to several sites as opposed to a new combined cycle plant (Smith and Tygarts Creek locations). The Smith facility currently has nine simple cycle gas turbines and EKPC would potentially add three more in the open slots planned for Units 8, 11, and 12 as well as two in the location of the potential combined cycle (previous unfinished coal plant) for a total of five new simple cycle gas turbines. As the Tygarts Creek site location would be greenfield, three x 100% SCGT's were placed on one of the larger potential land plots. Expected output is between 232-262 MW net (each CTG) depending on which GT manufacturer is chosen. Therefore, new/additional capacity would be ~1,161-1,312 MW (net) at Smith (5x), and ~697-787 MW (gross) at Tygarts Creek (3x). Each potential SCGT facility would include a full CTG package (either Siemens SGT6-5000F or GE 7F.05) which would be dual-fuel rated for natural gas or ULSD, new/additional fuel gas dewpoint heaters and pressure regulation, ULSD No.2 fuel oil storage tanks, unloading and forwarding pumps and inline heaters, new/additional fire water pumps (electric and diesel), air-cooled heat exchangers (ACHE) sized for each unit, along with new/additional water treatment systems for the additional demineralized water requirement. Refer to Appendix D for a full list of all equipment included for each facility option.

The additional water requirements for the dual fuel-rated turbines would be sourced from the existing system (Smith), a new well, or directly off the Ohio River (Tygarts Creek). Additional investigations should be completed in the next phase of the design to confirm adequate water capacity and any water treatment requirements for each site. Refer to Appendix C for the Water Mass Balance (WMB) for each option and site.

As with other generation options, BMcD used the preliminary equipment sizing, layout, and spacing requirements from each manufacturer (including electrical and control room sizing requirements) to develop the overall site general arrangement. EKPC indicated they wanted a majority of the equipment located indoors to minimize potential freezing and cold weather concerns, so enclosures were added around the CTG's and included in the project cost. Similar to the RICE and CCGT options, 72-hours of ULSD No.2 fuel oil storage was provided for emergency operation of the CTG's without natural gas. Using the vendor supplied information along with past project historical knowledge, BMcD developed preliminary facility one-line diagrams, evaluated expected performance and emissions estimates, Level 1 project schedules and conceptual cost estimates. Refer to the Appendices for details for each site.

Support Infrastructure

Several of the site locations would require new supporting infrastructure offsite for the new generation facilities including new supply natural gas pipelines, new high voltage transmission lines and interconnections, and new water sourcing. A brief discussion on each of these is included below.

New Gas Pipeline

To potentially reuse existing EKPC facilities (Spurlock and Cooper), EKPC wanted to investigate the feasibility of new gas pipeline for conversions to gas generation. BMcD engaged the owner/operator of nearby gas pipelines to review feasibility of a new supply gas pipeline as well as potential routes, costs, and lead times. Preliminary pipeline routes to each site along with high level costs and schedule were developed and provided to EKPC.

New High Voltage Transmission

Similar to the new gas pipelines, new transmission lines would need to be sited, permitted, and schedule and costs developed for supplying the new generation power to the PJM grid. However, a more detailed analysis of the options and routing is discussed in a separate report and these costs were excluded from the supplied capital costs for these projects at this time.

New Water Supply

Several of the new generation locations would be greenfield sites and sourcing sufficient makeup water was a concern. Following development of preliminary WMB's for the options, BMcD preformed desktop evaluations of existing water supply sources to confirm if sufficient water is available. Several of the sites indicated low capacity from nearby groundwater wells. However, for RICE projects, the water supply requirement was relatively low and local city/county potable water supply could achieve sufficient makeup capacity. For locations where larger supply would be required, equipment selections were made to minimize the makeup capacity requirements, namely the use of ACC's and ACHE's. For the sites located close to existing water supplies (i.e. Cooper, Tygarts Creek), it was assumed the existing Cumberland Lake or Ohio River could be sourced and permitted for makeup supply. BMcD recommends a more detailed analysis of each site's water supply and water quality requirements in the next phase of the project to confirm these assumptions.

<u>Application Support</u>

In addition to evaluating each new generation option, potential locations, and developing feasibility costs, BMcD supported EKPC with developing front end interconnection and permitting application process.

PJM/Interconnection Request

For the options EKPC indicated they were most likely to proceed with (RICE at the Liberty 3 location, CCGT at the Cooper power station), BMcD requested the necessary PJM Interconnection data from the major generator equipment suppliers (RICE, CTG, STG). With this data, BMcD supported EKPC with

filling out the technical portion of the PJM interconnection request to get the application process started. BMcD plans to continue to support EKPC in this process as needed.

Air Permit Application

BMcD also requested the necessary performance and emissions data from the major equipment suppliers to start the Air Permitting process. Using the preliminary GA's, BMcD identified stack locations, emission sources and locations, adjacent building heights, and supported EKPC's efforts to initiate the permitting process for the selected project locations. BMcD developed GA's and emissions data for the major equipment suppliers to support EKPC with each site's Air Permit application. BMcD will continue to support EKPC throughout the permitting process over the next phases of the project development.

Schedule

Level 1 project schedules for the selected new generation options were developed. These include approximate durations for project development studies, permitting (RUS NEPA EA application, Air Permit application, PSC CPCN application), PJM Interconnection application and review cycles, front-end procurements of major equipment (RICE engines, GSU's, CTG's, HRSG's, STG, ACC), detailed design and BOP procurements, construction and commissioning durations. These durations are based on recent project experience, EKPC feedback, and major equipment supplier stated lead times. It is expected that these schedules will be further developed and fine-tuned in subsequent project development.

Capital Cost Estimates

The information provided in this memo report is preliminary in nature and is intended to provide AACE Class 4 feasibility-level costs for EKPC to determine whether further evaluation is desired. Should EKPC elect to pursue one or several of these options for further evaluation, BMcD recommends a bottoms-up cost estimate based on a more detailed general arrangement, scope assumptions matrix, development of key engineering documents, and further refinement of pricing from equipment manufacturers.

The cost estimates are based on a multi-prime contract approach and were developed based on the general arrangement sketches in Appendix A, project scope assumptions listed in Appendix B, and conceptual design considerations included in Appendices C, D, and E. Major equipment costs were based on budgetary quotes from suppliers. BOP costs were scaled from similar recent projects of similar size and type. Indirect costs (construction management, engineering, start-up, and commercial) are percentages based on the direct cost and were discussed with EKPC in advance. Taxes, land acquisition, and fuel were excluded from this evaluation. Additionally, capital costs for new transmission lines and supply gas pipelines were also excluded at this time. A $4,000,000 demolition allowance was included for the Smith site to cover expected subgrade demolition of unfinished coal plant foundations. An additional 2% of Total Project Costs for Owner's project related builders risk insurance was included. Project contingency was set to 15% of BOP with an additional 3% of major equipment direct and indirect project costs based on perceived unknowns and risks for each Option. Project escalation was assumed to be 4% per year of direct and indirect costs based on a COD of 2029 for the RICE project and 2033 for the CCGT and SCGT projects. Operation and Maintenance (O&M) costs were not evaluated in this study. Refer to Appendix H for more information on each option's cost estimate.

There is current market volatility for labor and supply of equipment and materials. Labor costs for the area were based upon Burns & McDonnell's experience in this location of the country. Supply of major equipment and materials continues to be very volatile in the market and could affect the overall project schedule and budget.

Estimates, schedules, forecasts, and projections prepared by BMcD relating to loads, interest rates, and other financial analysis parameters, construction costs and schedules, operation and maintenance costs, equipment characteristics and performance, and operating results are opinions based on BMcD's experience, qualifications, and judgement as a professional consultant. Since BMcD has no control over weather, cost and availability of labor, cost and availability of material and equipment, cost of fuel or other utilities, labor productivity, construction contractors' procedures and methods, unavoidable delays, construction contractors' methods of determining prices, economic conditions, government regulations and laws (including the interpretation thereof), competitive bidding or market conditions, and other factors affecting such estimates or projections, BMcD does not guarantee that actual rates, costs, quantities, performance, schedules, will not vary from estimates and projections prepared by BMcD.

Next Steps

Future project scoping studies will be necessary for project options that are of interest to EKPC. These studies would include refinement of general arrangements, a more in-depth review of plant failure modes, redundancy, life safety considerations, potential future expansions, more development of plant performance and expected emissions, project schedules, and development of front-end engineering deliverables. These include site design conditions and Code basis, permit matrix, project division of responsibility (DOR) matrix, equipment list, process flow diagram, heat & material balance, P&IDs, WMB, site arrangements, one-line diagrams, control system architecture, geotechnical analysis, system descriptions, water and wastewater analysis, and a further refined cost estimate based on these deliverables.

Summary & Recommendations

This memo report summarizes the new generation options reviewed and evaluated by BMcD and EKPC during the project feasibility study. This study was intended to provide EKPC with a greater understanding of each project's viability should they decide to pursue them further. Where this report focuses on the fossil fuel generation production of RICE, simple, and combined cycle facilities, additional studies and reports detail the other new generation options that EKPC is reviewing.

Of the RICE property options, several potential sites were promising, however Liberty 3 provides the environmentally preferable alternative including less impacts to adjacent properties and improved transmission support to EKPC's existing system. For CCGT facilities, both the existing Smith and Cooper Stations would provide favorable locations as the environmentally preferable alternatives to green field sites pending infrastructure upgrades Additionally, the Smith station would also be able to support new SCGT generation. The Tygarts Creek location is promising but would need further siting development to ensure it remains a feasible location. BMcD will support EKPC with any additional generation or site location analysis and next step scoping studies to continue to progress these new generation options.

Sincerely,

Zach Bahr, P.E.
Engineering Manager

cc: Nick Bauer, Project Manager
Von Steiner, Project Manager

Appendix A – Conceptual General Arrangements
Appendix B – Scope Assumption Matrices
Appendix C – Water Mass Balances
Appendix D – Equipment Lists
Appendix E – One-Line Diagrams
Appendix F – Preliminary Level 1 Schedules
Appendix G – Performance and Emission Estimates
Appendix H – Generation Option Capital Cost Estimates

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EKPC desired a minimum of 214 MW of net new generation produced by this RICE facility. Existing RICE manufacturers include Wartsila, Caterpillar, GE/Jenbacher, MAN, and Hyundai Heavy Industries. To achieve the desired 214 MW with less machines, it was recommended to focus on 18 MW or larger engines for this feasibility effort. Of the manufacturers, only Wartsila and MAN produce 18 MW or larger engines. BMcD engaged with both manufacturers and provided a shortform technical specification to request sufficient technical data to initiate a PJM Interconnect application, as well as budgetary costs and lead times to further develop the project feasibility. BMcD used the vendor-supplied conceptual information (along with past project experience) to develop the PFR deliverables such as the site general arrangement, scope matrix (Appendix B), equipment list (Appendix D), one-line diagrams (Appendix E), performance and emissions estimates (Appendix G), project schedule (Appendix F) and cost estimate (Appendix H). Note that because RICE facilities do not require much water use, once it was confirmed a city supply would be available, a detailed water mass balance was determined to be unnecessary for this stage of the project.

BMcD used the preliminary equipment sizing, layout, and spacing requirements from each manufacturer (including electrical and control room sizing requirements) to develop the overall site general arrangement. EKPC indicated they wanted a majority of the equipment located indoors to minimize potential freezing and cold weather concerns. They also determined that the facility needed to be dual fuel capable. Each engine shall run on either natural gas or ultra-low sulfur diesel (ULSD) No.2 fuel oil to provide flexibility and redundancy should the primary fuel (natural gas) supply get curtailed by the gas company. In addition to the natural gas supply and conditioning equipment, 72 hours-worth of ULSD No.2 fuel oil will be stored in two tanks located onsite near the engine hall. The facility will be provided with administrative rooms and a separate warehouse. Because Liberty 3 is a greenfield site, the preliminary layout includes a new guard shack, property fencing, storm water retention pond, both permanent and temporary construction parking, and equipment laydown spaces. It was determined that the new meter and regulation (M&R) station would be placed near the edge of the site to provide unencumbered access by the pipeline company.

Using the preliminary GA and Site Plan and major equipment supplier budgetary cost estimates, BMcD used historical data to estimate the balance of plant (BOP) costs for the rest of the project. These capital costs were included with the other project costs and are included in Appendix H. Likewise, using the major equipment supplier's lead time along with past project historical durations, BMcD developed a preliminary Level 1 project schedule which is provided in Appendix F.

CCGT Generation Facility Options

Similar to the RICE facilities, EKPC reviewed several potential site locations for combined cycle generation plants, including their existing J.K. Smith (Smith) and John Sherman Cooper (Cooper) power stations as well as a few new greenfield locations in eastern Kentucky near and adjacent to the Ohio River (near Tygarts Creek). The Smith and Cooper sites both include a new 2x1 CCGT plant whereas the greenfield site in eastern Kentucky includes a 3x1 CCGT powerplant. The Cooper site would require a

new gas pipeline to deliver natural gas for the new facility. The Smith site already has nine simple cycle units onsite with sufficient excess gas supply and would have the most free space and infrastructure for the new CCGT plant. However, based on economics and sufficiency of water supply, EKPC preferred to locate the CCGT plant at the Cooper facility. The Tygarts Creek area facility was seen as a potential third option behind the other two sites, but additional siting development would be required to further vet this location.

Because of EKPC's experience with F-Class combustion turbine generators (CTG), it was desirable to pursue and add new units to the existing fleet for interchangeability of spare parts and familiarity of design/operation of the combustion turbines. Additionally, EKPC decided against duct firing the new heat recovery steam generators (HRSG) as the expected generation load did not require this extra capacity and for concerns for $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). Based on this direction, the new 2x1 CCGT facility would generate approximately 725 MW (net). Due to the lack of sufficient water availability, the Smith site would require an air-cooled condenser (ACC) whereas the Cooper site is located next to Cumberland Lake and could use a cooling tower and wet surface condenser for cooling. The use of a cooling tower at the Cooper facility was also beneficial due to the decrease in parasitic load of 8-14 MW as opposed to the use of an ACC. The Tygarts Creek location would also likely use wet cooling due to its proximity to the Ohio River. This can be further evaluated if EKPC decides to pursue this location in the future.

In parallel with determining the site location for this 2x1 CCGT facility, BMcD developed short-form technical specifications and issued bid packages to the major equipment suppliers. For F-Class CTG's, this includes Siemens and General Electric (GE). The HRSG's were bid out to Vogt, GE, and Nooter Eriksen. The steam turbine generator (STG) was bid to Siemens, GE, and Toshiba. Using the technical data provided, BMcD was able to approximate expected performance and emissions from each major equipment manufacturer as well as help initiate the PJM Interconnection application and air permit.

As with the RICE facilities, BMcD used the supplied vendor information to create Site Plans and GA's for the two major CTG vendors at several site locations as discussed below:

Smith: The Smith 2x1 CCGT would be located on the site of a previously uncompleted coal plant. This site location was ideal for providing adequate space for all major equipment and included supporting infrastructure for transmission and gas pipeline onsite. Since some foundation and underground utilities were previously installed for the unfinished coal plant, an allowance for demolition of these items was included in the cost estimate.

Significant transmission infrastructure is already in place at Smith. A new 345 kV substation would most likely be required with new transmission-line connections to the existing 345 kV substation. For transmission-system network upgrades, a new 138 kV line from JK Smith to the existing EKPC Fawkes substation in northern Madison County is expected to be needed (estimated line length of approximately 17 miles). Additionally, numerous upgrades of existing transmission lines in the area are expected to be needed based on preliminary power-flow studies. This location provides minimal incremental benefits to the transmission system. The site currently has nine (9) simple-cycle combustion turbines that are

available to provide support to the transmission system in the region, so added generation at this location provides only marginal support beyond what already exists.

Tygarts Creek: This location was reviewed for a potential 3x1 CCGT facility in eastern Kentucky. Several greenfield parcels were reviewed for their close proximity to natural gas pipelines and existing transmission lines. A promising location was identified close to the Ohio River. However, EKPC indicated further development of this location is on hold.

A 765 kV transmission line owned by American Electric Power ("AEP") is in close proximity to this site. The CCGT facility would be connected to this 765 kV line via a new substation in order to integrate the generation facility into PJM. Preliminary power-flow analysis has identified several potential upgrades that could be required on the AEP system due to the new generation interconnection to its 765 kV system. This location would provide no benefits to the EKPC transmission system from a generation-support standpoint. There would be no direct connection to the EKPC system, since the facility would connect only to the AEP 765 kV system as the means to integrate the facility into the PJM market. Therefore, EKPC would not realize any transmission benefits from the facility.

Cooper: This location was favorable since the site houses an existing coal plant and provides substantial existing infrastructure, water and transmission along a corridor that needs voltage support. However, finding sufficient land space for the 2x1 CCGT plant was a challenge. EKPC indicated they were considering moth-balling Unit 1 and retrofitting Unit 2 with a coal-to-gas conversion. With these existing units no longer using coal at some future date uncertain whether by EPA's Greenhouse Gas Rule or Court Stay Motion, EKPC requested BMcD investigate using the land space of the existing coal pile for the new CCGT plant location. EKPC wanted a 10-day coal storage pile to remain for emergencies for Unit 2. To allow the existing smaller coal pile to remain in service, all coal handling support facilities (coal dumper, transfer conveyors, hoppers, etc.) must remain in service. Additionally, a coal pile pond would need to remain to collect coal pile surface runoff and settlement of coal fines prior to pumping to the existing wastewater treatment system as well as for holding excess storm water from the existing plant. Therefore, to best use the available space, it was determined a new smaller coal pond would be designed and located closer to the active storage pile next to Unit 2 so the rest of the coal pile footprint could be reused for the combined cycle facility.

Because Cooper is located in a geographic area with lots of karst formations, understanding subsurface details will be important for further design. Due to a lack of existing subsurface data underneath the active coal pile, it was assumed that a large amount of flowable fill would be required in addition to piling the major equipment and buildings. This allowance was included in the cost estimate. Future subsurface investigation in and around the coal pile will be important to better understand what potential deep foundations would be required.

Significant 161 kV and 69 kV transmission infrastructure currently exists at Cooper. A new 161 kV substation would most likely be required with associated establishment of transmission-line connections to the existing 161 kV substation. Regarding transmission-system network upgrades, a new 161 kV line from Cooper to the existing LG&E/KU Alcalde substation which is southeast of the city of Somerset, Kentucky is expected to be needed (estimated line length of approximately 7 miles). Additionally,

numerous upgrades of existing transmission lines and substation equipment in the area are expected to be needed based on preliminary power-flow studies. The significant advantage of this site from a transmission perspective is that it is geographically in a key area of the southern portion of EKPC's system, and thereby can provide substantial support to the transmission system when needed during high-load periods.

Using the preliminary GA's and Site Plans, and major equipment supplier budgetary cost estimates, BMcD then used historical information from similar projects to estimate the BOP costs for the rest of the project. These capital costs were included with the other project costs and are listed in Appendix H. Likewise, using the major equipment supplier's lead time along with past project historical durations, BMcD developed a preliminary Level 1 project schedule which is provided in Appendix F.

SCGT Generation Facility

EKPC requested BMcD review the feasibility of adding simple cycle gas turbines to several sites as opposed to a new combined cycle plant (Smith and Tygarts Creek locations). The Smith facility currently has nine simple cycle gas turbines and EKPC would potentially add three more in the open slots planned for Units 8, 11, and 12 as well as two in the location of the potential combined cycle (previous unfinished coal plant) for a total of five new simple cycle gas turbines. As the Tygarts Creek site location would be greenfield, three x 100% SCGT's were placed on one of the larger potential land plots. Expected output is between 232-262 MW net (each CTG) depending on which GT manufacturer is chosen. Therefore, new/additional capacity would be ~1,161-1,312 MW (net) at Smith (5x), and ~697-787 MW (gross) at Tygarts Creek (3x). Each potential SCGT facility would include a full CTG package (either Siemens SGT6-5000F or GE 7F.05) which would be dual-fuel rated for natural gas or ULSD, new/additional fuel gas dewpoint heaters and pressure regulation, ULSD No.2 fuel oil storage tanks, unloading and forwarding pumps and inline heaters, new/additional fire water pumps (electric and diesel), air-cooled heat exchangers (ACHE) sized for each unit, along with new/additional water treatment systems for the additional demineralized water requirement. Refer to Appendix D for a full list of all equipment included for each facility option.

The additional water requirements for the dual fuel-rated turbines would be sourced from the existing system (Smith), a new well, or directly off the Ohio River (Tygarts Creek). Additional investigations should be completed in the next phase of the design to confirm adequate water capacity and any water treatment requirements for each site. Refer to Appendix C for the Water Mass Balance (WMB) for each option and site.

As with other generation options, BMcD used the preliminary equipment sizing, layout, and spacing requirements from each manufacturer (including electrical and control room sizing requirements) to develop the overall site general arrangement. EKPC indicated they wanted a majority of the equipment located indoors to minimize potential freezing and cold weather concerns, so enclosures were added around the CTG's and included in the project cost. Similar to the RICE and CCGT options, 72-hours of ULSD No.2 fuel oil storage was provided for emergency operation of the CTG's without natural gas. Using the vendor supplied information along with past project historical knowledge, BMcD developed preliminary facility one-line diagrams, evaluated expected performance and emissions estimates, Level 1 project schedules and conceptual cost estimates. Refer to the Appendices for details for each site.

Support Infrastructure

Several of the site locations would require new supporting infrastructure offsite for the new generation facilities including new supply natural gas pipelines, new high voltage transmission lines and interconnections, and new water sourcing. A brief discussion on each of these is included below.

New Gas Pipeline

To potentially reuse existing EKPC facilities (Spurlock and Cooper), EKPC wanted to investigate the feasibility of new gas pipeline for conversions to gas generation. BMcD engaged the owner/operator of nearby gas pipelines to review feasibility of a new supply gas pipeline as well as potential routes, costs, and lead times. Preliminary pipeline routes to each site along with high level costs and schedule were developed and provided to EKPC.

New High Voltage Transmission

Similar to the new gas pipelines, new transmission lines would need to be sited, permitted, and schedule and costs developed for supplying the new generation power to the PJM grid. However, a more detailed analysis of the options and routing is discussed in a separate report and these costs were excluded from the supplied capital costs for these projects at this time.

New Water Supply

Several of the new generation locations would be greenfield sites and sourcing sufficient makeup water was a concern. Following development of preliminary WMB's for the options, BMcD preformed desktop evaluations of existing water supply sources to confirm if sufficient water is available. Several of the sites indicated low capacity from nearby groundwater wells. However, for RICE projects, the water supply requirement was relatively low and local city/county potable water supply could achieve sufficient makeup capacity. For locations where larger supply would be required, equipment selections were made to minimize the makeup capacity requirements, namely the use of ACC's and ACHE's. For the sites located close to existing water supplies (i.e. Cooper, Tygarts Creek), it was assumed the existing Cumberland Lake or Ohio River could be sourced and permitted for makeup supply. BMcD recommends a more detailed analysis of each site's water supply and water quality requirements in the next phase of the project to confirm these assumptions.

<u>Application Support</u>

In addition to evaluating each new generation option, potential locations, and developing feasibility costs, BMcD supported EKPC with developing front end interconnection and permitting application process.

PJM/Interconnection Request

For the options EKPC indicated they were most likely to proceed with (RICE at the Liberty 3 location, CCGT at the Cooper power station), BMcD requested the necessary PJM Interconnection data from the major generator equipment suppliers (RICE, CTG, STG). With this data, BMcD supported EKPC with

filling out the technical portion of the PJM interconnection request to get the application process started. BMcD plans to continue to support EKPC in this process as needed.

Air Permit Application

BMcD also requested the necessary performance and emissions data from the major equipment suppliers to start the Air Permitting process. Using the preliminary GA's, BMcD identified stack locations, emission sources and locations, adjacent building heights, and supported EKPC's efforts to initiate the permitting process for the selected project locations. BMcD developed GA's and emissions data for the major equipment suppliers to support EKPC with each site's Air Permit application. BMcD will continue to support EKPC throughout the permitting process over the next phases of the project development.

Schedule

Level 1 project schedules for the selected new generation options were developed. These include approximate durations for project development studies, permitting (RUS NEPA EA application, Air Permit application, PSC CPCN application), PJM Interconnection application and review cycles, front-end procurements of major equipment (RICE engines, GSU's, CTG's, HRSG's, STG, ACC), detailed design and BOP procurements, construction and commissioning durations. These durations are based on recent project experience, EKPC feedback, and major equipment supplier stated lead times. It is expected that these schedules will be further developed and fine-tuned in subsequent project development.

Capital Cost Estimates

The information provided in this memo report is preliminary in nature and is intended to provide AACE Class 4 feasibility-level costs for EKPC to determine whether further evaluation is desired. Should EKPC elect to pursue one or several of these options for further evaluation, BMcD recommends a bottoms-up cost estimate based on a more detailed general arrangement, scope assumptions matrix, development of key engineering documents, and further refinement of pricing from equipment manufacturers.

The cost estimates are based on a multi-prime contract approach and were developed based on the general arrangement sketches in Appendix A, project scope assumptions listed in Appendix B, and conceptual design considerations included in Appendices C, D, and E. Major equipment costs were based on budgetary quotes from suppliers. BOP costs were scaled from similar recent projects of similar size and type. Indirect costs (construction management, engineering, start-up, and commercial) are percentages based on the direct cost and were discussed with EKPC in advance. Taxes, land acquisition, and fuel were excluded from this evaluation. Additionally, capital costs for new transmission lines and supply gas pipelines were also excluded at this time. A $4,000,000 demolition allowance was included for the Smith site to cover expected subgrade demolition of unfinished coal plant foundations. An additional 2% of Total Project Costs for Owner's project related builders risk insurance was included. Project contingency was set to 15% of BOP with an additional 3% of major equipment direct and indirect project costs based on perceived unknowns and risks for each Option. Project escalation was assumed to be 4% per year of direct and indirect costs based on a COD of 2029 for the RICE project and 2033 for the CCGT and SCGT projects. Operation and Maintenance (O&M) costs were not evaluated in this study. Refer to Appendix H for more information on each option's cost estimate.

There is current market volatility for labor and supply of equipment and materials. Labor costs for the area were based upon Burns & McDonnell's experience in this location of the country. Supply of major equipment and materials continues to be very volatile in the market and could affect the overall project schedule and budget.

Estimates, schedules, forecasts, and projections prepared by BMcD relating to loads, interest rates, and other financial analysis parameters, construction costs and schedules, operation and maintenance costs, equipment characteristics and performance, and operating results are opinions based on BMcD's experience, qualifications, and judgement as a professional consultant. Since BMcD has no control over weather, cost and availability of labor, cost and availability of material and equipment, cost of fuel or other utilities, labor productivity, construction contractors' procedures and methods, unavoidable delays, construction contractors' methods of determining prices, economic conditions, government regulations and laws (including the interpretation thereof), competitive bidding or market conditions, and other factors affecting such estimates or projections, BMcD does not guarantee that actual rates, costs, quantities, performance, schedules, will not vary from estimates and projections prepared by BMcD.

Next Steps

Future project scoping studies will be necessary for project options that are of interest to EKPC. These studies would include refinement of general arrangements, a more in-depth review of plant failure modes, redundancy, life safety considerations, potential future expansions, more development of plant performance and expected emissions, project schedules, and development of front-end engineering deliverables. These include site design conditions and Code basis, permit matrix, project division of responsibility (DOR) matrix, equipment list, process flow diagram, heat & material balance, P&IDs, WMB, site arrangements, one-line diagrams, control system architecture, geotechnical analysis, system descriptions, water and wastewater analysis, and a further refined cost estimate based on these deliverables.

Summary & Recommendations

This memo report summarizes the new generation options reviewed and evaluated by BMcD and EKPC during the project feasibility study. This study was intended to provide EKPC with a greater understanding of each project's viability should they decide to pursue them further. Where this report focuses on the fossil fuel generation production of RICE, simple, and combined cycle facilities, additional studies and reports detail the other new generation options that EKPC is reviewing.

Of the RICE property options, several potential sites were promising, however Liberty 3 provides the environmentally preferable alternative including less impacts to adjacent properties and improved transmission support to EKPC's existing system. For CCGT facilities, both the existing Smith and Cooper Stations would provide favorable locations as the environmentally preferable alternatives to green field sites pending infrastructure upgrades Additionally, the Smith station would also be able to support new SCGT generation. The Tygarts Creek location is promising but would need further siting development to ensure it remains a feasible location. BMcD will support EKPC with any additional generation or site location analysis and next step scoping studies to continue to progress these new generation options.

Sincerely,

Zach Bahr, P.E.
Engineering Manager

cc: Nick Bauer, Project Manager
Von Steiner, Project Manager

Appendix A – Conceptual General Arrangements
Appendix B – Scope Assumption Matrices
Appendix C – Water Mass Balances
Appendix D – Equipment Lists
Appendix E – One-Line Diagrams
Appendix F – Preliminary Level 1 Schedules
Appendix G – Performance and Emission Estimates
Appendix H – Generation Option Capital Cost Estimates

APPENDIX A – GENERAL ARRANGEMENTS

LEGEND:

- EXISTING BURIED GAS PIPELINE
- REROUTED BURIED GAS PIPELINE
- PIPELINE EASEMENT
- BURIED GAS PIPELINE EASEMENT
- PROPERTY LINE

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
E	09/05/23	WRL		ADDED SWITCHYARD
D	08/30/23	WRL		REVISED PLANT LAYOUT LOCATION, ADJUST FOR NEW GAS LINE REROUTE
C	08/08/23	WRL		REVISE LOCATION OF GAS LINE
B	08/04/23	WRL		REVISED LAYOUT
A	07/12/23	WRL		PRELIMINARY

SITE PLAN

0 200' 400'

SCALE IN FEET

NORTH

BURNS McDONNELL

designed

detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CAMPBELLSVILLE SITE 6
12 x 18MW GAS RECIP ENGINE PLANT
OVERALL SITE PLAN
BASED ON WARTSILA ENGINES

project 157785 | contract

drawing **GA600 – E** | rev.

sheet | of | sheets

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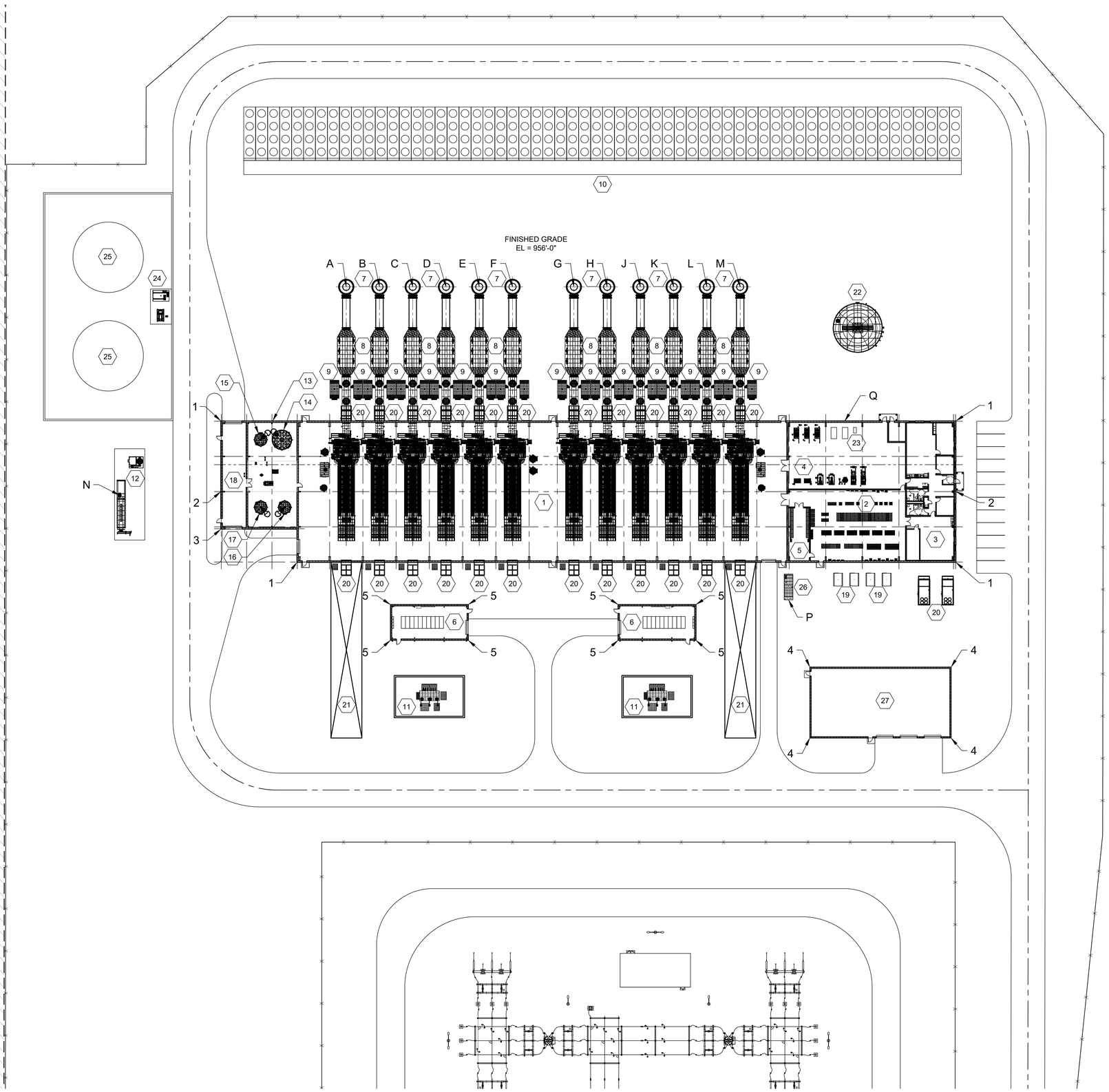
Inches



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Q	N: 2042160.497	E: 1750523.502	35'-0"

BUILDING HEIGHTS

ITEM	HEIGHT
1	34'-0"
2	45'-0"
3	39'-0"
4	25'-0"
5	23'-0"

SITE KEY

1	ENGINE HALL
2	LOW VOLTAGE ROOM
3	ADMIN-CONTROL AREA
4	MECHANICAL ROOM
5	BATTERY ROOM
6	MEDIUM VOLTAGE BLDG
7	SILENCERS - STACKS
8	SELECTIVE CATALYTIC REDUCER
9	CHARGE AIR FILTER
10	RADIATORS
11	STEP-UP TRANSFORMER AND CONTAINMENT
12	GAS CONDITIONING
13	OIL-UREA / AMMONIA CONTAINMENT
14	UREA / AMMONIA TANK
15	NEW LUBE OIL TANK
16	SERVICE LUBE OIL TANK
17	WASTE LUBE OIL TANK
18	OIL-UREA / AMMONIA UNLOADING STATION
19	STATION TRANSFORMER
20	HVAC UNITS
21	HEAVY HAUL
22	FIRE WATER TANK
23	FIRE WATER PUMPS
24	FUEL PUMPS
25	FUEL TANK WITH CONTAINMENT
26	AUX GENERATOR
27	WAREHOUSE

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
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D	08/30/23	WRL		REVISED PLANT LAYOUT LOCATION, ADJUST FOR NEW GAS LINE REROUTE
C	08/08/23	WRL		REVISE LOCATION OF GAS LINE
B	08/04/23	WRL		REVISED LAYOUT
A	07/12/23	WRL		PRELIMINARY

POWER BLOCK ENLARGED PLAN

0 30' 60'
SCALE IN FEET

TRUE NORTH 33°0'0"
PLAN NORTH
NORTH

BURNS McDONNELL

designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CAMPBELLSVILLE SITE 6
12 x 18MW GAS RECIP ENGINE PLANT
ENLARGED PLAN
BASED ON WARTSILA ENGINES

project 157785
contract
drawing GA601 – E
rev.
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Scale For Microfilming
Millimeters
Inches

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PRELIMINARY - NOT FOR CONSTRUCTION

Scale For Microfilming
Millimeters
Inches

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A	08/02/23	WRL		PRELIMINARY

no.	date	by	ckd	description

SITE PLAN
0 100' 200'
SCALE IN FEET
NORTH

BURNS McDONNELL

designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

LIBERTY SITE 3
12 x 18MW GAS RECIP ENGINE PLANT
PREFERRED SITE
OVERALL SITE PLAN

project 157785
contract
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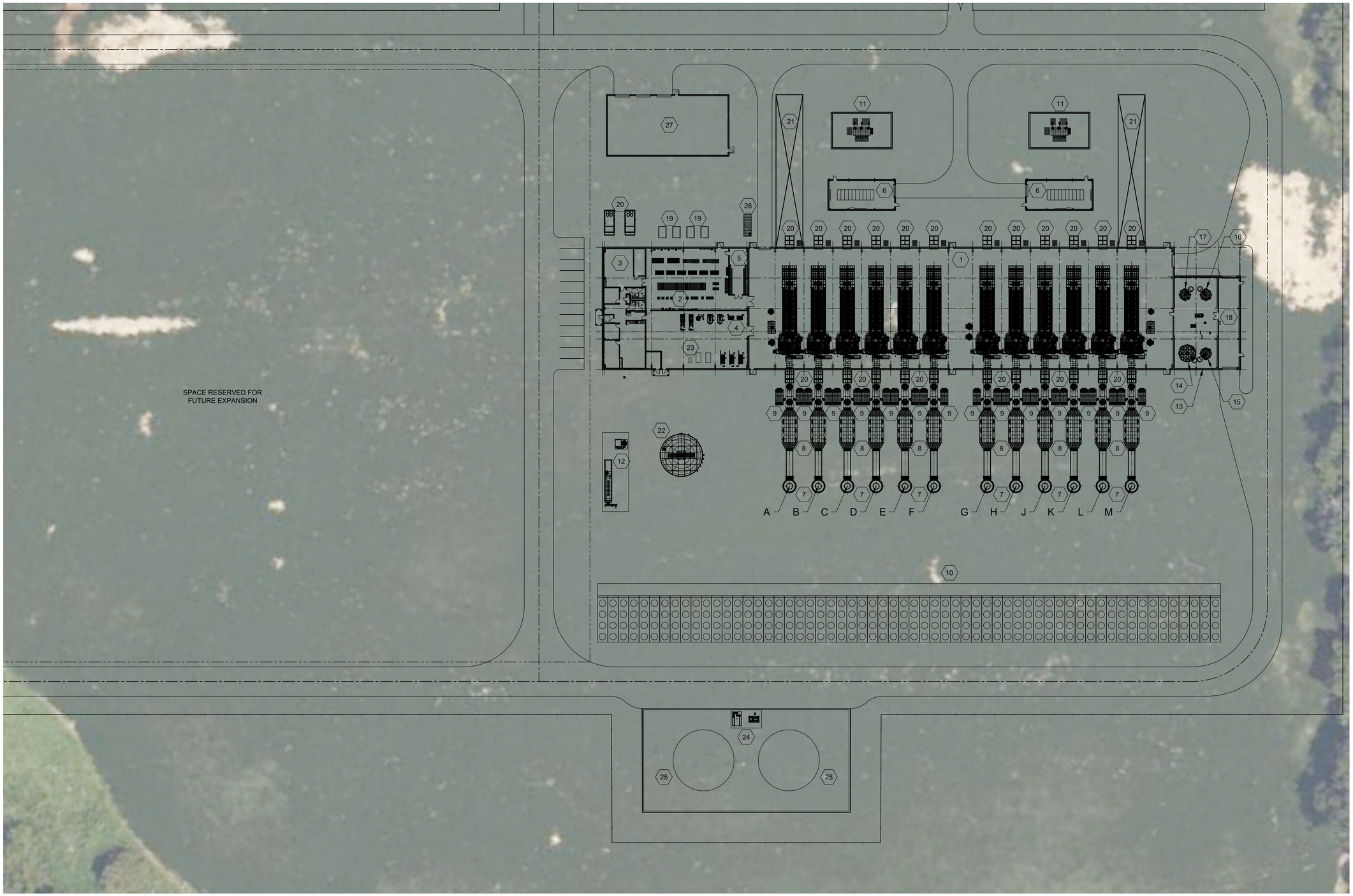

SITE KEY

1	ENGINE HALL
2	LOW VOLTAGE ROOM
3	ADMIN-CONTROL AREA
4	MECHANICAL ROOM
5	BATTERY ROOM
6	MEDIUM VOLTAGE BLDG
7	SILENCERS - STACKS
8	SELECTIVE CATALYTIC REDUCER
9	CHARGE AIR FILTER
10	RADIATORS
11	STEP-UP TRANSFORMER AND CONTAINMENT
12	GAS CONDITIONING
13	OIL-UREA / AMMONIA CONTAINMENT
14	UREA / AMMONIA TANK
15	NEW LUBE OIL TANK
16	SERVICE LUBE OIL TANK
17	WASTE LUBE OIL TANK
18	OIL-UREA / AMMONIA UNLOADING STATION
19	STATION TRANSFORMER
20	HVAC UNITS
21	HEAVY HAUL
22	FIRE WATER TANK
23	FIRE PUMPS
24	FUEL PUMPS
25	FUEL TANK WITH CONTAINMENT
26	AUX GENERATOR
27	WAREHOUSE

STACK COORDS

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PRELIMINARY - NOT FOR CONSTRUCTION

Scale For Microfilming
Millimeters
Inches

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POWER BLOCK ENLARGED PLAN
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SCALE IN FEET

TRUE NORTH 21°0'0"
PLAN NORTH

BURNS McDONNELL

designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

LIBERTY SITE 3
12 x 18MW GAS RECIP ENGINE PLANT
PREFERRED SITE
ENLARGED PLAN

project 157785
contract
drawing **GA111 – A**
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SITE PLAN

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SCALE IN FEET

NORTH

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
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A	05/26/23	WRL		PRELIMINARY

BURNS McDONNELL

designed

detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

LIBERTY SITE 4
12 x 18MW GAS RECIP ENGINE PLANT
PREFERRED SITE
OVERALL SITE PLAN

project 157785 | contract

drawing GA100 – rev. B

sheet of sheets

file 157785_12X18MW-GA100-LIBRTY.DWG

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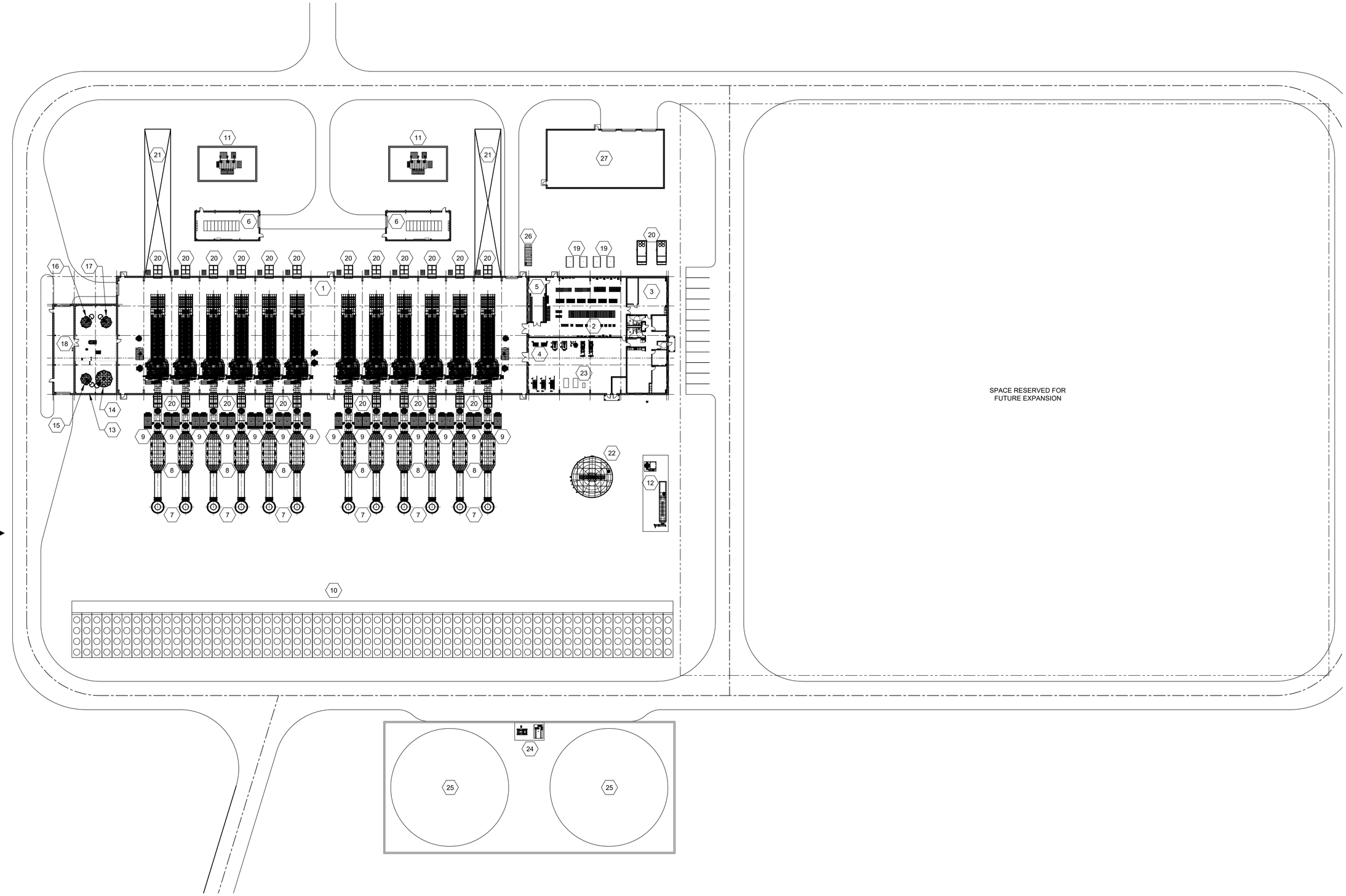
Scale For Microfilming: Millimeters / Inches



SITE KEY

1	ENGINE HALL
2	LOW VOLTAGE ROOM
3	ADMIN-CONTROL AREA
4	MECHANICAL ROOM
5	BATTERY ROOM
6	MEDIUM VOLTAGE BLDG
7	SILENCERS - STACKS
8	SELECTIVE CATALYTIC REDUCER
9	CHARGE AIR FILTER
10	RADIATORS
11	STEP-UP TRANSFORMER AND CONTAINMENT
12	GAS CONDITIONING
13	OIL-UREA / AMMONIA CONTAINMENT
14	UREA / AMMONIA TANK
15	NEW LUBE OIL TANK
16	SERVICE LUBE OIL TANK
17	WASTE LUBE OIL TANK
18	OIL-UREA / AMMONIA UNLOADING STATION
19	STATION TRANSFORMER
20	HVAC UNITS
21	HEAVY HAUL
22	FIRE WATER TANK
23	FIRE PUMP HOUSE
24	FUEL PUMPS
25	FUEL TANK WITH CONTAINMENT
26	AUX GENERATOR
27	WAREHOUSE

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	06/29/23	WRL		REVISED PLANT LAYOUT
A	05/26/23	WRL		PRELIMINARY

BURNS McDONNELL

designed | detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

LIBERTY SITE 4
12 x 18MW GAS RECIP ENGINE PLANT
PREFERRED SITE
ENLARGED PLAN

project 157785 | contract

drawing GA101 – rev. B

sheet | of | sheets

file 157785_12X18MW-GA101-LIBRTY.DWG

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PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	07/06/23	WRL		PRELIMINARY

SITE PLAN
0 200' 400'
SCALE IN FEET
NORTH

BURNS McDONNELL

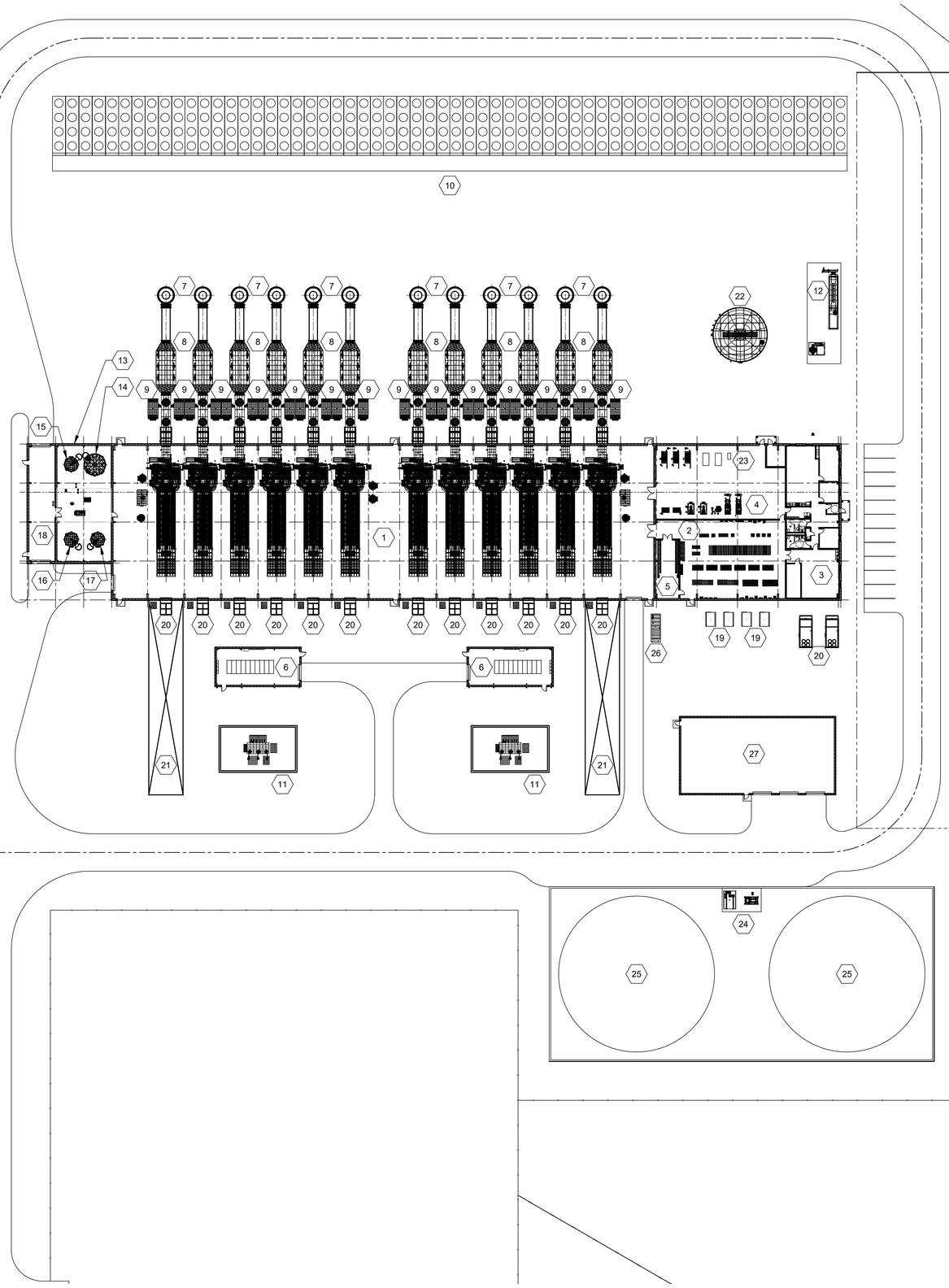
designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

LIBERTY SITE 5
12 x 18MW GAS RECIP ENGINE PLANT
OPTION B SITE
OVERALL SITE PLAN

project 157785 | contract
drawing **GA305 – A** | rev.
sheet of sheets
file 157785_12X18MW-GA305-PORTER.DWG

Z:\CLIENTS\ENR\EKPC\157785_RECIPSTUDY\2_DESIGN\MECH\DWGS\GNRL_ARRANGMNT\157785_12X18MW-GA305-PORTER.DWG 7/12/2023 WLESNIAK



SPACE RESERVED FOR
FUTURE EXPANSION

SITE KEY

1	ENGINE HALL
2	LOW VOLTAGE ROOM
3	ADMIN-CONTROL AREA
4	MECHANICAL ROOM
5	BATTERY ROOM
6	MEDIUM VOLTAGE BLDG
7	SILENCERS - STACKS
8	SELECTIVE CATALYTIC REDUCER
9	CHARGE AIR FILTER
10	RADIATORS
11	STEP-UP TRANSFORMER AND CONTAINMENT
12	GAS CONDITIONING
13	OIL-UREA / AMMONIA CONTAINMENT
14	UREA / AMMONIA TANK
15	NEW LUBE OIL TANK
16	SERVICE LUBE OIL TANK
17	WASTE LUBE OIL TANK
18	OIL-UREA / AMMONIA UNLOADING STATION
19	STATION TRANSFORMER
20	HVAC UNITS
21	HEAVY HAUL
22	FIRE WATER TANK
23	FIRE WATER PUMPS
24	FUEL PUMPS
25	FUEL TANK WITH CONTAINMENT
26	AUX GENERATOR
27	WAREHOUSE

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	05/26/23	WRL		PRELIMINARY

POWER BLOCK ENLARGED PLAN

0 16' 32' 64'
SCALE IN FEET

PLAN NORTH
NORTH
NORTH TRUE
37°0'0"

BURNS McDONNELL

designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

LIBERTY SITE 5
12 x 18MW GAS RECIP ENGINE PLANT
OPTION B SITE
ENLARGED PLAN

project 157785 | contract

drawing GA306 – rev. A

sheet of sheets

file 157785_12X18MW-GA306-PORTER.DWG

Scale For Microfilming
Millimeters
Inches

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STACK COORDS		
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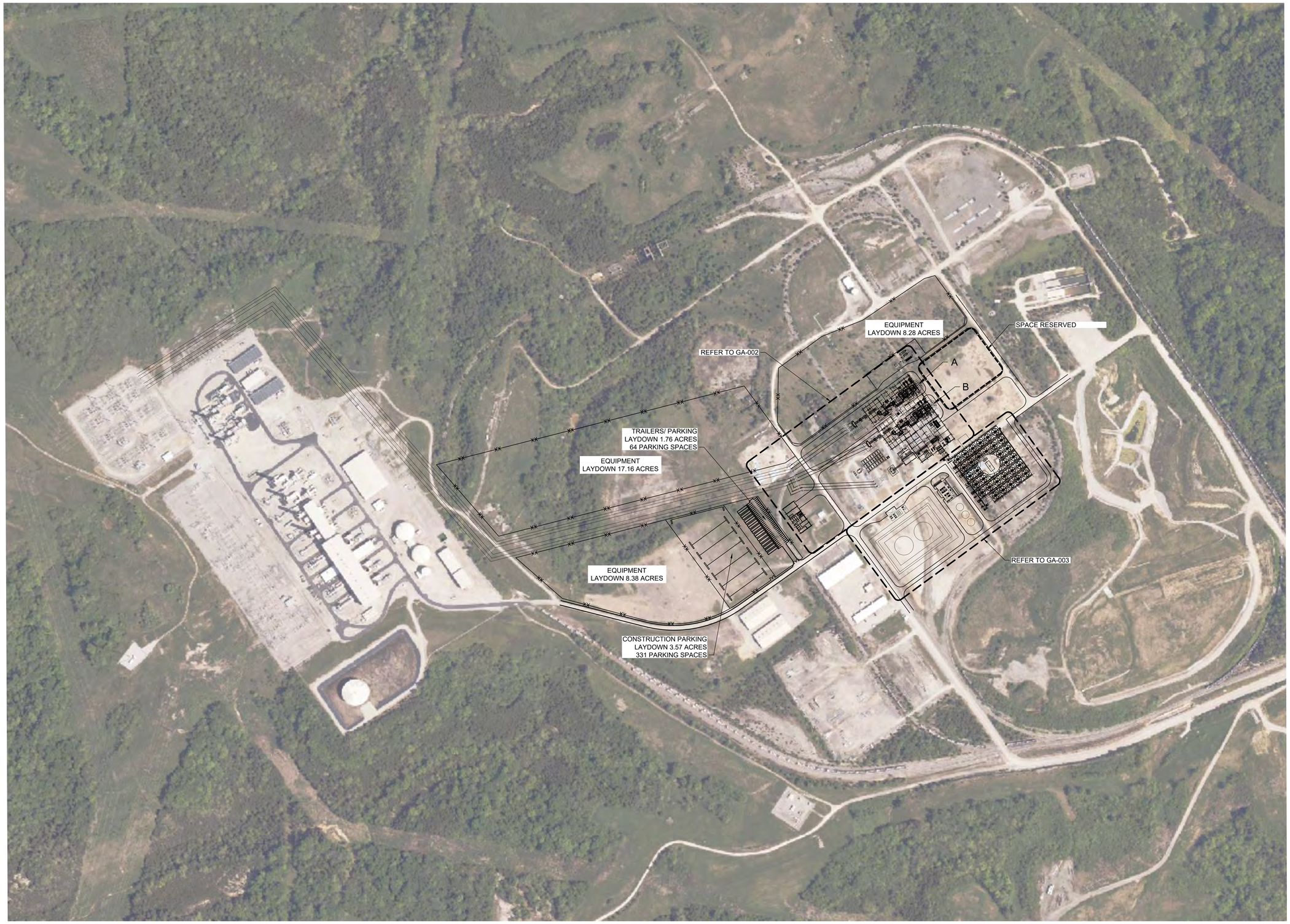

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	06/20/23	WRL	-	REVISED PER REDLINES
A	06/14/23	WRL	-	PRELIMINARY

OVERALL SITE PLAN

0 200' 400'

SCALE IN FEET

NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
2 x1 CCGT PLANT
OVERALL SITE PLAN

project 157787 | contract

drawing **GA001** | rev. **B**

sheet | of | sheets

file 157787_2X1 CCGT-GA001.DWG

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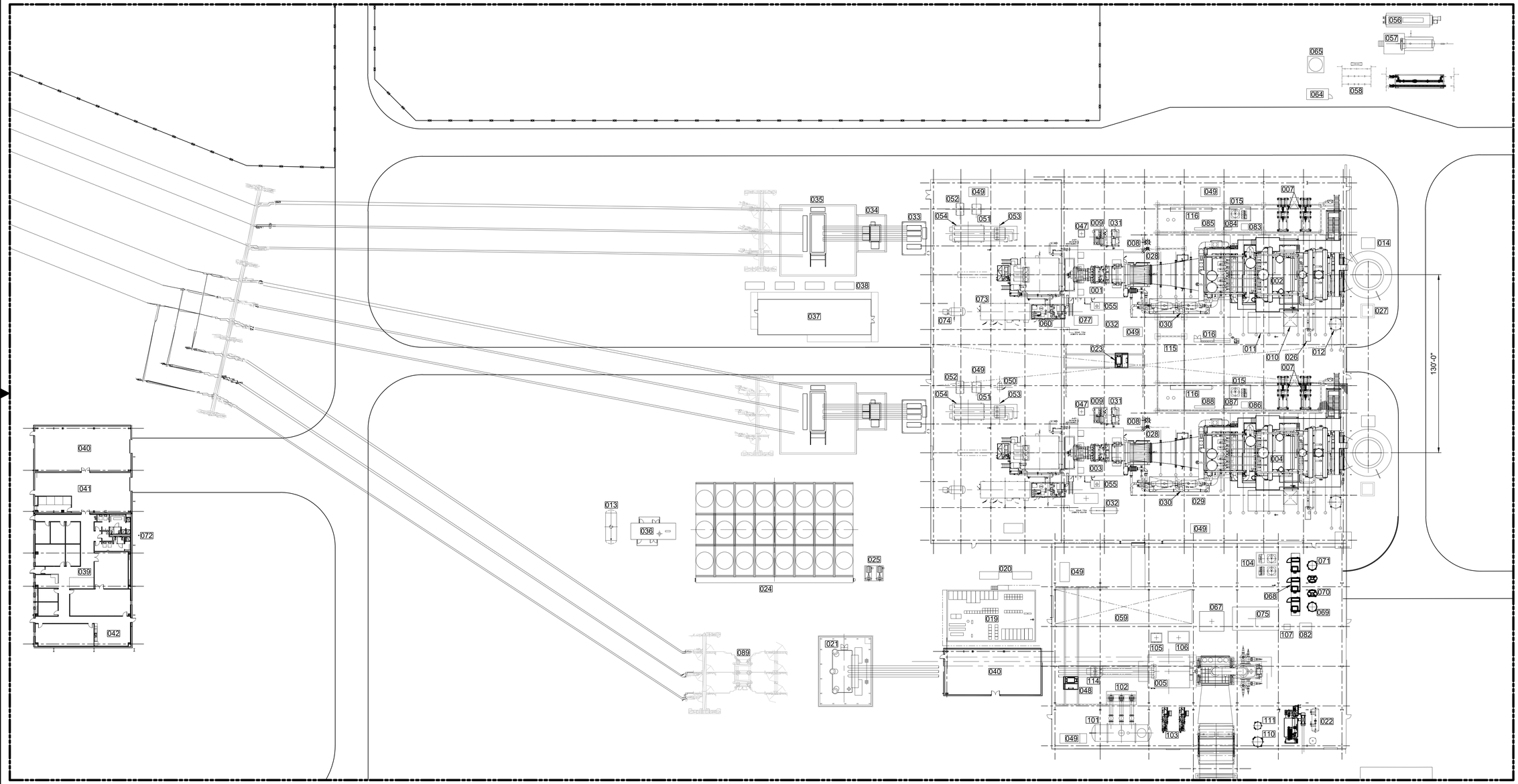
Millimeters
Scale For Microfilming
Inches

EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST	
DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT
001	UNIT 1 GAS TURBINE (GT)	019	STG PCM	037	MAIN PCM	055	GT AIR COMPRESSOR	073	GT ELECTRICAL PACKAGE	102	CONDENSATE PUMPS
002	UNIT 1 HEAT RECOVERY STEAM GENERATOR (HRSG)	020	STG PCM SS TRANSFORMERS	038	MAIN PCM SS TRANSFORMERS (TOTAL 4)	056	FUEL GAS DEWPOINT HEATER	074	GT FIRE PROTECTION PACKAGE	103	VACUUM PUMP SKID
003	UNIT 2 GAS TURBINE (GT)	021	STG GSU TRANSFORMER	039	ADMINISTRATION BUILDING	057	COALESCING FILTER SEPARATOR	075	STEAM TURBINE LUBE OIL MODULE	104	CHEMICAL FEED EQUIPMENT (AMINE & OXYGEN SCAV)
004	UNIT 2 HEAT RECOVERY STEAM GENERATOR (HRSG)	022	AUXILIARY BOILER	040	WAREHOUSE	058	FUEL GAS REGULATING/METERING STATION BLDG	076	TEMP DEMIN TRAILERS (SEE GA-003)	105	STG SEE TRANSFORMER
005	UNIT 3 STEAM TURBINE GENERATOR (STG)	023	GT CRANE	041	MAINTENANCE SHOP	059	LIFTING BAY	077	GT PORTABLE COMPRESSOR WASHING UNIT	106	STG SEE TRANSFORMER ELECT PACKAGE
006	AIR COOLED CONDENSER (ACC) (SEE GA-003)	024	CLOSED COOLING WATER FIN FAN COOLER	042	CONTROL ROOM	060	GT LUBE OIL PACKAGE	078	FUEL OIL CONTAINMENT (SEE GA-003)	107	OIL STAINER
007	BOILER FEEDWATER PUMP	025	CLOSED COOLING WATER PUMPS	043	AQUEOUS AMMONIA FORWARDING PUMPS (SEE GA-003)	061	FUEL OIL STORAGE TANK (SEE GA-003)	079	AQUEOUS AMMONIA STORAGE TANK (SEE GA-003)	110	STG ATM DRAINS TANK
008	GT FUEL GAS FILTER / SEPARATOR	026	LP ECONOMIZER RECIRCULATION PUMPS	044	NOT USED	062	FUEL OIL UNLOADING PUMPS (SEE GA-003)	080	AQUEOUS AMMONIA CONTAINMENT (SEE GA-003)	111	STG FLASH TANK
009	GT FUEL OIL PUMP SKID	027	CEMS	045	WATER TREATMENT ENCLOSURE (SEE GA-003)	063	FUEL OIL FORWARDING PUMPS (SEE GA-003)	081	WATER TREATMENT SS TRANSFORMER (SEE GA-003)	114	STG VT & SURGE CUBICLE
010	SCR LOADING ZONE	028	FUEL GAS PILOT FILTER/SEPARATOR	046	DEMINERALIZED WATER STORAGE TANK (SEE GA-003)	064	RTU / DAC BUILDING	082	ST CONTROL OIL SKID	115	PIPE RACK
011	AMMONIA FLOW CONTROL UNIT	029	NOT USED	047	GT CONTROL OIL PACKAGE	065	SUMP TANK	083	U1 CTG CEMS	116	PERFORMANCE HEATER
012	HRSG BLOWDOWN TANK	030	ROTOR AIR COOLER	048	STG BRIDGE CRANE	066	FUEL OIL HEATERS (SEE GA-003)	084	U1 HRSG DCS	117	RAW WATER STORAGE TANK (SEE GA-003)
013	OIL WATER SEPARATOR	031	GT WATER INJECTION PUMP SKID	049	HV AIR ROTATION UNITS	067	GLAND STEAM CONDENSER	085	U1 HRSG 480V MCC	118	RAW WATER TRANSFER PUMPS (SEE GA-003)
014	BLOWDOWN SUMP	032	WATER WASH/FALSE START DRAINS TANK	050	SFC CROSSOVER SWITCH CUBICLE	068	AIR COMPRESSORS	086	U2 CTG CEMS	119	SERVICE/FIRE WATER STORAGE TANK (SEE GA-003)
015	HRSG CHEMICAL FEED (PHOSPHATE)	033	GT GENERATOR CIRCUIT BREAKER	051	GT SEE TRANSFORMER	069	WET AIR RECEIVER	087	U2 HRSG DCS	120	SERVICE WATER PUMPS (SEE GA-003)
016	SAMPLE PANEL	034	GT AUXILIARY TRANSFORMER	052	GT SFC TRANSFORMER	070	AIR DRYER SKIDS	088	U2 HRSG 480V MCC	121	ELECTRIC FIRE WATER PUMP (SEE GA-003)
017	ACC PCM (SEE GA-003)	035	GT SSU TRANSFORMER	053	GT VT & SURGE CUBICLE WITH SFC SWITCH	071	DRY AIR RECEIVER	089	STG 345kV BREAKER	122	DIESEL FIRE WATER PUMP (SEE GA-003)
018	ACC SS TRANSFORMER (SEE GA-003)	036	EMERGENCY DIESEL GENERATOR	054	GT SEE / SFC PACKAGE	072	SANITARY LIFT STATION	101	CONDENSATE TANK	123	JOCKEY FIRE WATER PUMP (SEE GA-003)



MATCHLINE DWG GA003

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	06/20/23	WRL	-	REVISED PER REDLINES
A	06/14/23	WRL	-	PRELIMINARY

PLAN NORTH — 53.91° — TRUE NORTH

SITE PLAN

0 30' 60'

SCALE IN FEET

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed
W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
2 x1 CCGT PLANT
ENLARGED SITE PLAN

project 157787 | contract

drawing **GA002** – rev. **B**

sheet of sheets

file 157787_2X1 CCGT-GA002.DWG

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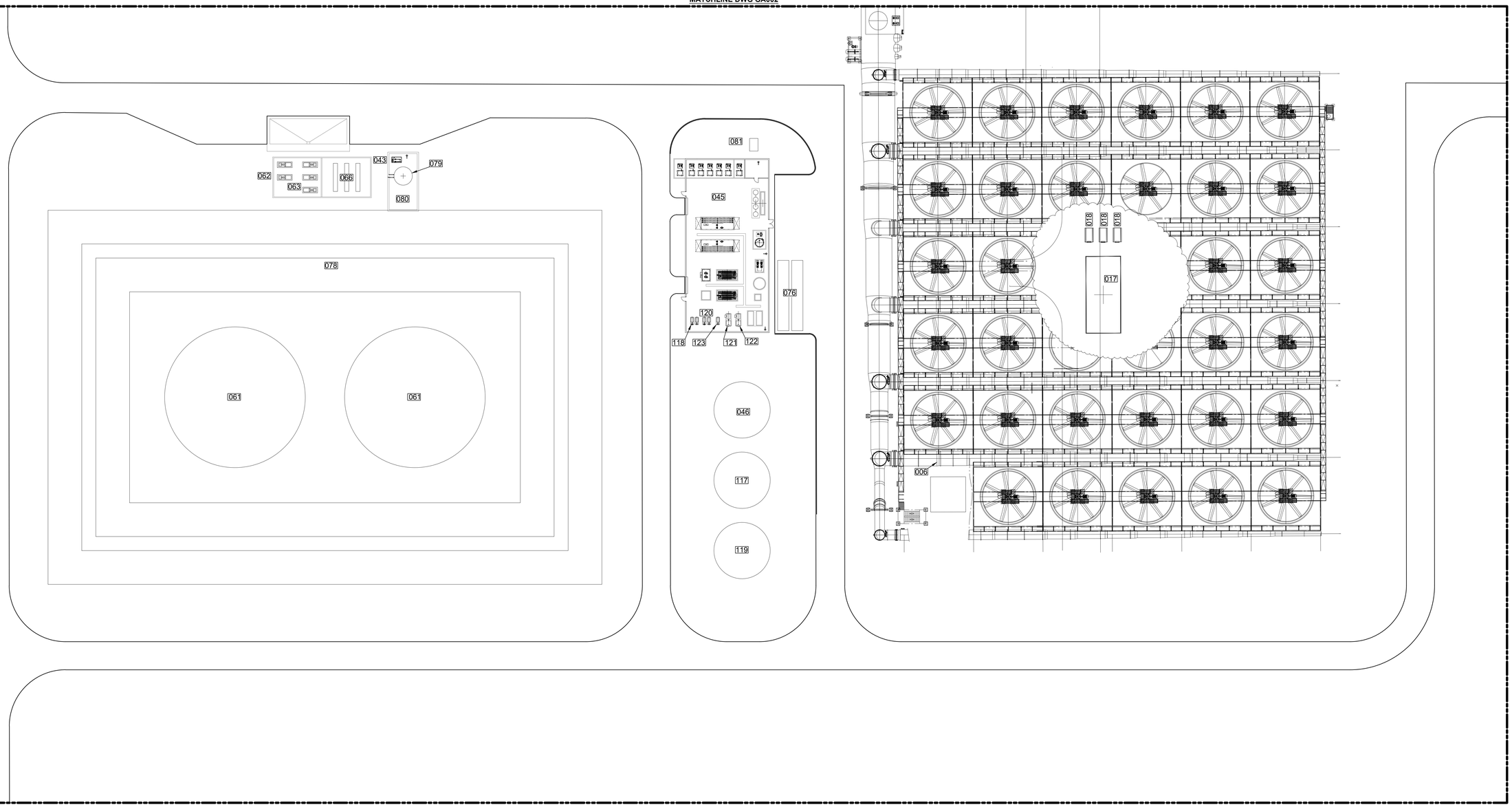
Scale For Microfilming: Millimeters / Inches

EQUIPMENT IDENTIFICATION AND LOCATION LIST	
DWG REF	DESCRIPTION NEW SITE EQUIPMENT
006	AIR COOLED CONDENSER (ACC)
017	ACC PCM
018	ACC SS TRANSFORMER
043	AQUEOUS AMMONIA FORWARDING PUMPS
045	WATER TREATMENT ENCLOSURE
046	DEMINERALIZED WATER STORAGE TANK
061	FUEL OIL STORAGE TANK
062	FUEL OIL UNLOADING PUMPS
063	FUEL OIL FORWARDING PUMPS
066	FUEL OIL HEATERS
076	TEMP DEMIN TRAILERS (BY OWNER)
078	FUEL OIL CONTAINMENT
079	AQUEOUS AMMONIA STORAGE TANK
080	AQUEOUS AMMONIA CONTAINMENT
081	WATER TREATMENT SS TRANSFORMER
117	RAW WATER STORAGE TANK
118	RAW WATER TRANSFER PUMPS
119	SERVICE/FIRE WATER STORAGE TANK
120	SERVICE WATER PUMPS
121	ELECTRIC FIRE WATER PUMP
122	DIESEL FIRE WATER PUMP
123	JOCKEY FIRE WATER PUMP

MATCHLINE DWG GA002



Millimeters
Scale For Microfilming
Inches

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	06/20/23	WRL	-	REVISED PER REDLINES
A	06/14/23	WRL	-	PRELIMINARY

SITE PLAN
0 30' 60'
SCALE IN FEET

NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed W. LESNIAK | detailed

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
2 x1 CCGT PLANT
ENLARGED SITE PLAN

project 157787 | contract

drawing **GA003** – rev. **B**

sheet of sheets

file 157787_2X1 CCGT-GA003.DWG

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PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	09/07/23	WRL	-	PRELIMINARY

OVERALL SITE PLAN

0 100' 200'
SCALE IN FEET

NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

COOPER POWER PLANT
2 x1 CCGT PLANT
OVERALL SITE PLAN
BASED ON SIEMENS GTG's

project 157787
contract
drawing **GA200 – A**
rev.
sheet of sheets
file 157787_2X1-SIEMENS-COOPER-GA200.DWG

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DWG REF	DESCRIPTION NEW SITE EQUIPMENT
001	UNIT 3 GAS TURBINE (GT)
002	UNIT 3 HEAT RECOVERY STEAM GENERATOR (HRSG)
003	UNIT 4 GAS TURBINE (GT)
004	UNIT 4 HEAT RECOVERY STEAM GENERATOR (HRSG)
005	UNIT 5 STEAM TURBINE GENERATOR (STG)
006	COOLING TOWER (CT) (SEE GA-202)
007	BOILER FEEDWATER PUMP
008	GT FUEL GAS FILTER / SEPARATOR
009	GT FUEL OIL PUMP SKID
010	SCR LOADING ZONE
011	AMMONIA FLOW CONTROL UNIT
012	HRSG BLOWDOWN TANK
013	OIL WATER SEPARATOR
014	BLOWDOWN SUMP
015	HRSG CHEMICAL FEED (PHOSPHATE)
016	SAMPLE PANEL
017	COOLING TOWER (CT) PCM (SEE GA-202)
018	CT SS TRANSFORMER (SEE GA-202)

DWG REF	DESCRIPTION NEW SITE EQUIPMENT
019	STG ELECTRICAL ROOM
020	STG SS TRANSFORMERS
021	STG GSU TRANSFORMER
022	GLAND STEAM CONDENSER BLOWER SKID
023	GT CRANE
024	CLOSED COOLING WATER HEAT EXCHANGER
025	CLOSED COOLING WATER PUMPS
026	LP ECONOMIZER RECIRCULATION PUMPS
027	CEMS
028	FUEL GAS PILOT FILTER/SEPARATOR
029	STG EXCITER TRANSFORMER
030	ROTOR AIR COOLER
031	GT WATER INJECTION PUMP SKID
032	WATER WASH/FALSE START DRAINS TANK
033	GT GENERATOR CIRCUIT BREAKER
034	GT AUXILIARY TRANSFORMER
035	GT GSU TRANSFORMER
036	EMERGENCY DIESEL GENERATOR

DWG REF	DESCRIPTION NEW SITE EQUIPMENT
037	MAIN PCM
038	MAIN PCM SS TRANSFORMERS (TOTAL 4)
039	ADMINISTRATION ROOMS
040	WAREHOUSE
041	MAINTENANCE SHOP
042	CONTROL ROOM
043	AQUEOUS AMMONIA FORWARDING PUMPS
044	STG EXCITATION COMPARTMENT
045	WATER TREATMENT ENCLOSURE (SEE GA-202)
046	DEMINERALIZED WATER STORAGE TANK (SEE GA-202)
047	GT CONTROL OIL PACKAGE
048	STG BRIDGE CRANE
049	HV AIR ROTATION UNITS
050	SFC CROSSOVER SWITCH CUBICLE
051	GT SEE TRANSFORMER
052	GT SFC TRANSFORMER
053	GT VT & SURGE CUBICLE WITH SFC SWITCH
054	GT SEE / SFC PACKAGE

DWG REF	DESCRIPTION NEW SITE EQUIPMENT
055	GT AIR COMPRESSOR
056	FUEL GAS DEWPOINT HEATER
057	COALESCING FILTER SEPARATOR
058	FUEL GAS REGULATING/METERING STATION BLDG
059	LIFTING BAY
060	GT LUBE OIL PACKAGE
061	FUEL OIL STORAGE TANK
062	FUEL OIL UNLOADING PUMPS
063	FUEL OIL FORWARDING PUMPS
064	RTU / DAC BUILDING
065	SUMP TANK
066	FUEL OIL HEATERS
067	GLAND STEAM CONDENSER
068	AIR COMPRESSORS
069	WET AIR RECEIVER
070	AIR DRYER SKIDS
071	DRY AIR RECEIVER
072	SANITARY LIFT STATION

DWG REF	DESCRIPTION NEW SITE EQUIPMENT
073	GT ELECTRICAL PACKAGE
074	GT FIRE PROTECTION PACKAGE
075	STEAM TURBINE LUBE OIL MODULE
076	TEMP DEMIN TRAILERS (SEE GA-202)
077	GT PORTABLE COMPRESSOR WASHING UNIT
078	FUEL OIL CONTAINMENT
079	AQUEOUS AMMONIA STORAGE TANK
080	AQUEOUS AMMONIA CONTAINMENT
081	CT CHEMICAL FEED ENCLOSURE (SEE GA-202)
082	ST SEAL OIL SKID
083	U3 CTG CEMS
084	U3 HRSG DCS
085	U3 HRSG 480V MCC
086	U4 CTG CEMS
087	U4 HRSG DCS
088	U4 HRSG 480V MCC
089	CLOSED COOLING WATER FILTERS
090	AUX BOILER BLOWDOWN TANK
091	AUX BOILER
092	DEAERATOR
093	AUX BOILER FUEL REGULATING SKID
094	CIRCULATING WATER PUMPS (SEE GA-202)
095	AUXILIARY CIRCULATING WATER PUMP (SEE GA-202)
096	CIRCULATING WATER PIPE
097	CT ACID STORAGE TANK (SEE GA-202)
098	CT SODIUM HYPOCHLORITE STORAGE TANK (SEE GA-202)

DWG REF	DESCRIPTION NEW SITE EQUIPMENT
101	CONDENSATE TANK
102	CONDENSER VACUUM PUMP
103	VACUUM PUMP SKID
104	CHEMICAL FEED EQUIPMENT (AMINE & OXYGEN SCAV)
105	CLOSED COOLING WATER CHEMICAL POT FEEDER
106	CLOSED COOLING WATER HEAD TANK
107	SEAL STEAM SUPERHEATER (MEZZANINE FLOOR)
110	STG ATM DRAINS TANK
111	CONDENSER
114	STG VT & SURGE CUBICLE
115	PIPE RACK
116	PERFORMANCE HEATER
117	RAW WATER STORAGE TANK (SEE GA-202)
118	RAW WATER TRANSFER PUMPS (SEE GA-202)
119	SERVICE/FIRE WATER STORAGE TANK (SEE GA-202)
120	SERVICE WATER PUMPS (SEE GA-202)
121	ELECTRIC FIRE WATER PUMP (SEE GA-202)
122	DIESEL FIRE WATER PUMP (SEE GA-202)
123	JOCKEY FIRE WATER PUMP (SEE GA-202)
124	WWT FEED FORWARDING PUMP SKID (SEE GA-202)
125	WATER TREATMENT CLARIFIER (SEE GA-202)
126	WATER TREATMENT CLARIFIER UNDERFLOW PUMP (SEE GA-202)
127	SLUDGE HOLDING TANK (SEE GA-202)
128	FILTER PRESS FEED PUMP SKID (SEE GA-202)
129	FILTER PRESS CLOTH WASH TANK (SEE GA-202)
130	FILTER PRESS CLOTH WASH PUMP SKID (SEE GA-202)
131	WATER TREATMENT FILTER PRESS & UNLOADING BAY (SEE GA-202)
132	POLYMER FEED PUMP SKID (SEE GA-202)
133	COAGULANT FEED PUMP SKID (SEE GA-202)
134	WATER TREATMENT BUILDING AIR RECEIVER (SEE GA-202)
135	CLEARWELL SUMP PUMPS (SEE GA-202)

STACK COORDS

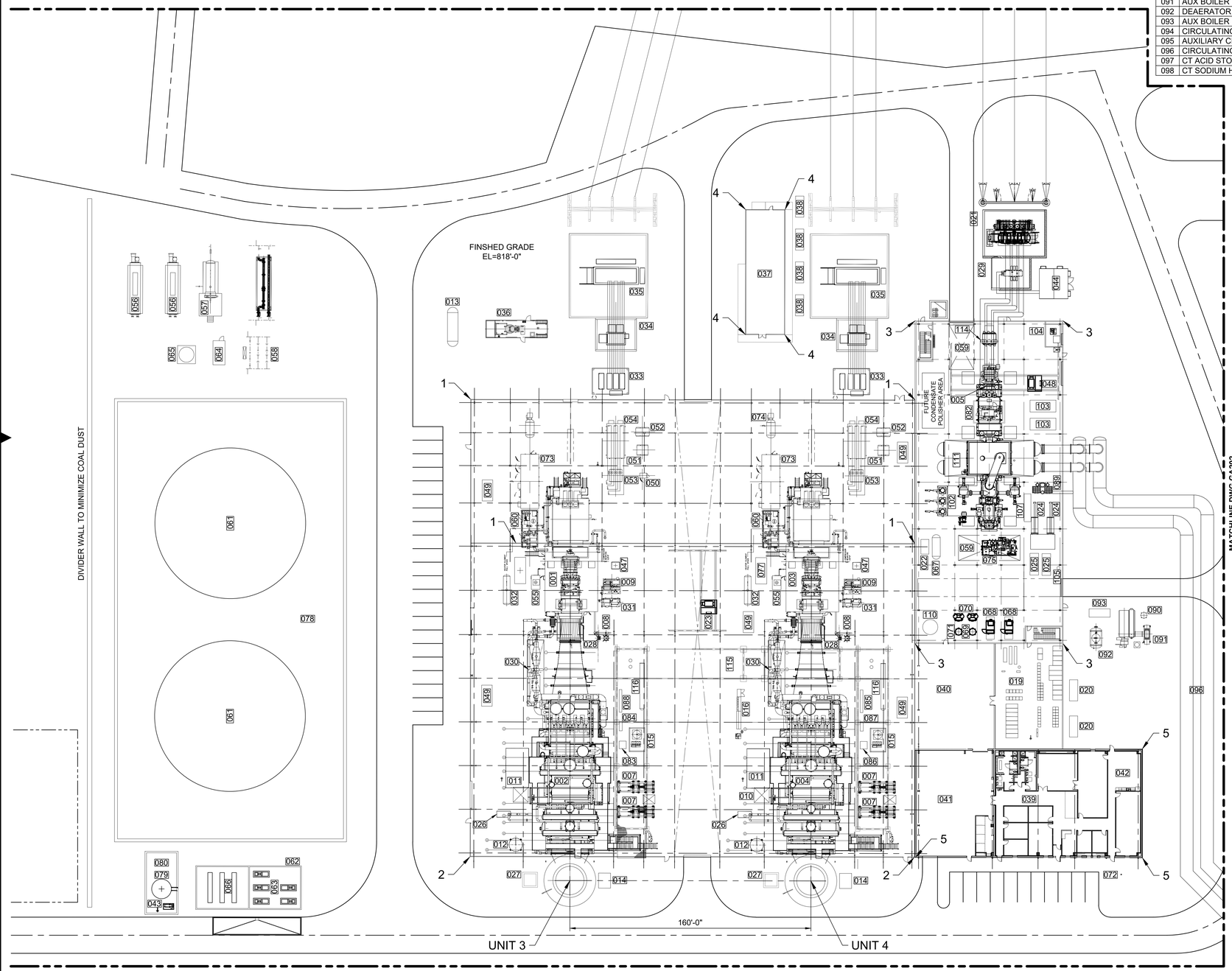
ITEM	NORTHING	EASTING	HEIGHT
UNIT 3	N: 1883903.276	E: 1979598.870	
UNIT 4	N: 1883806.802	E: 1979726.512	

EQUIPMENT COORDS

ITEM	NORTHING	EASTING	HEIGHT
GAS DEWPOINT HEATER 1	N: 1884377.645	E: 1979594.932	
GAS DEWPOINT HEATER 2	N: 1884377.645	E: 1979594.932	
EMERGENCY GENERATOR	N: 1884216.539	E: 1979791.636	
AUX BOILER	N: 1883807.464	E: 1980006.301	

BUILDING HEIGHTS

DESCRIPTION	HEIGHT
GAS TURBINE BLDG (1)	89'-0"
GAS TURBINE BLDG (2)	39'-0"
STEAM TURBINE BLDG (3)	97'-0"
MAIN PCM (4)	30'-0"
ADMINISTRATION (5)	20'-0"



PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	09/07/23	WRL	-	PRELIMINARY

SITE PLAN
0 30' 60'
SCALE IN FEET

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.
designed
detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE
CLARK COUNTY, KENTUCKY

COOPER POWER PLANT
2 x1 CCGT PLANT
ENLARGED PLAN
BASED ON SIEMENS GTG's

project 157787 | contract
drawing **GA201** – rev. **A**
sheet of sheets
file 157787_2X1-SIEMENS-COOPER-GA201.DWG

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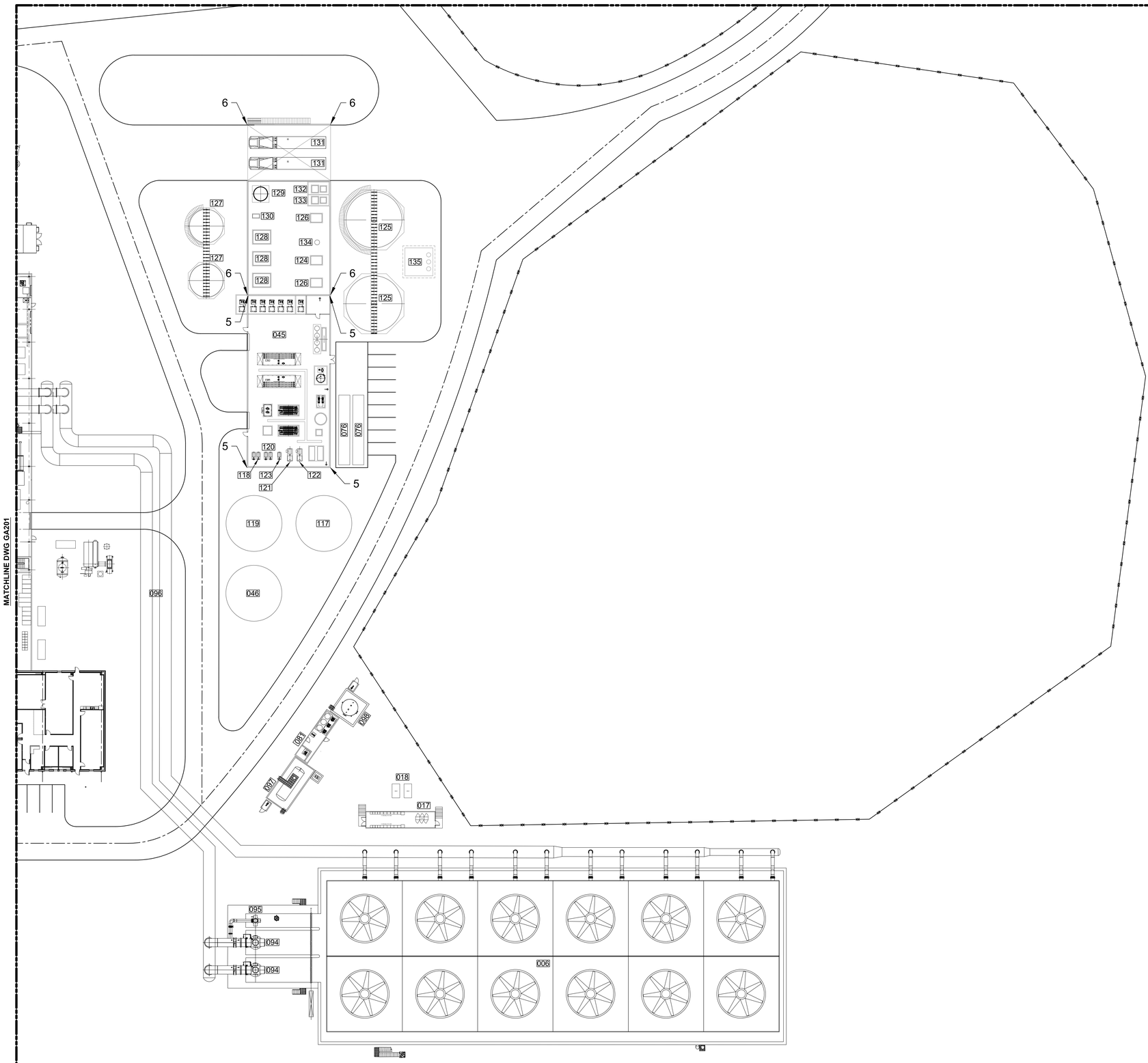

MATCHLINE DWG GA201

Millimeters
Inches
Scale For Microfilming

EQUIPMENT IDENTIFICATION AND LOCATION LIST	
DWG REF	DESCRIPTION NEW SITE EQUIPMENT
006	COOLING TOWER (CT)
017	COOLING TOWER PCM
018	COOLING TOWER SS TRANSFORMER
045	WATER TREATMENT ENCLOSURE
046	DEMINERALIZED WATER STORAGE TANK
076	TEMP DEMIN TRAILERS (BY OWNER)
081	COOLING TOWER CHEMICAL FEED ENCLOSURE
094	CIRCULATING WATER PUMPS
095	AUXILIARY CIRCULATING WATER PUMP
096	CIRCULATING WATER PIPE
097	COOLING TOWER ACID STORAGE TANK
098	COOLING TOWER SODIUM HYPOCHLORITE STORAGE TANK
117	RAW WATER STORAGE TANK
118	RAW WATER TRANSFER PUMPS
119	SERVICE/FIRE WATER STORAGE TANK
120	SERVICE WATER PUMPS
121	ELECTRIC FIRE WATER PUMP
122	DIESEL FIRE WATER PUMP
123	JOCKEY FIRE WATER PUMP
124	WWT FEED FORWARDING PUMP SKID
125	WATER TREATMENT CLARIFIER
126	WATER TREATMENT CLARIFIER UNDERFLOW PUMP
127	SLUDGE HOLDING TANK
128	FILTER PRESS FEED PUMP SKID
129	FILTER PRESS CLOTH WASH TANK
130	FILTER PRESS COLTH WASH PUMP SKID
131	WATER TREATMENT FILTER PRESS & UNLOADING BAY
132	POLYMER FEED PUMP SKID
133	COAGULANT FEED PUMP SKID
134	WATER TREATMENT BUILDING AIR RECEIVER
135	CLEARWELL SUMP PUMPS

EQUIPMENT COORDS

ITEM	NORTHING	EASTING	HEIGHT
DIESEL FIRE PUMP	N: 1883780.861	E: 1980156.565	

BUILDING HEIGHTS

DESCRIPTION	HEIGHT
WATER TREATMENT BLDG (5)	25'-0"
WATER TREATMENT BLDG (6)	40'-0"
COOLING TOWER (CT)	65'-0"
CT CHEMICAL FEED ENCLOSURE	12'-0"
COOLING TOWER (CT) PCM	10'-0"

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	09/07/23	WRL	-	PRELIMINARY

SITE PLAN
0 30' 60'
SCALE IN FEET

NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE
CLARK COUNTY, KENTUCKY

COOPER POWER PLANT
2 x1 CCGT PLANT
ENLARGED SITE PLAN
BASED ON SIEMENS GTG's

project 157787 | contract

drawing **GA202 – A** | rev.

sheet | of | sheets

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STACK COORDS		
ITEM	NORTHING	EASTING
A	N: 140462.807	E: 1686312.026
B	N: 140357.751	E: 1686388.598
C	N: 140693.398	E: 1682392.241
D	N: 140567.809	E: 1682474.257
E	N: 140121.373	E: 1682815.328

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	07/31/23	WRL	-	CHANGES PER REDLINES
A	07/05/23	WRL	-	PRELIMINARY

OVERALL SITE PLAN

0 200' 400'

SCALE IN FEET

NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed
W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
5 x SCGT PLANT
OVERALL SITE PLAN

project 157787 | contract

drawing GA100 – rev. B

sheet of sheets

file 157787_SCGT-GA100.DWG

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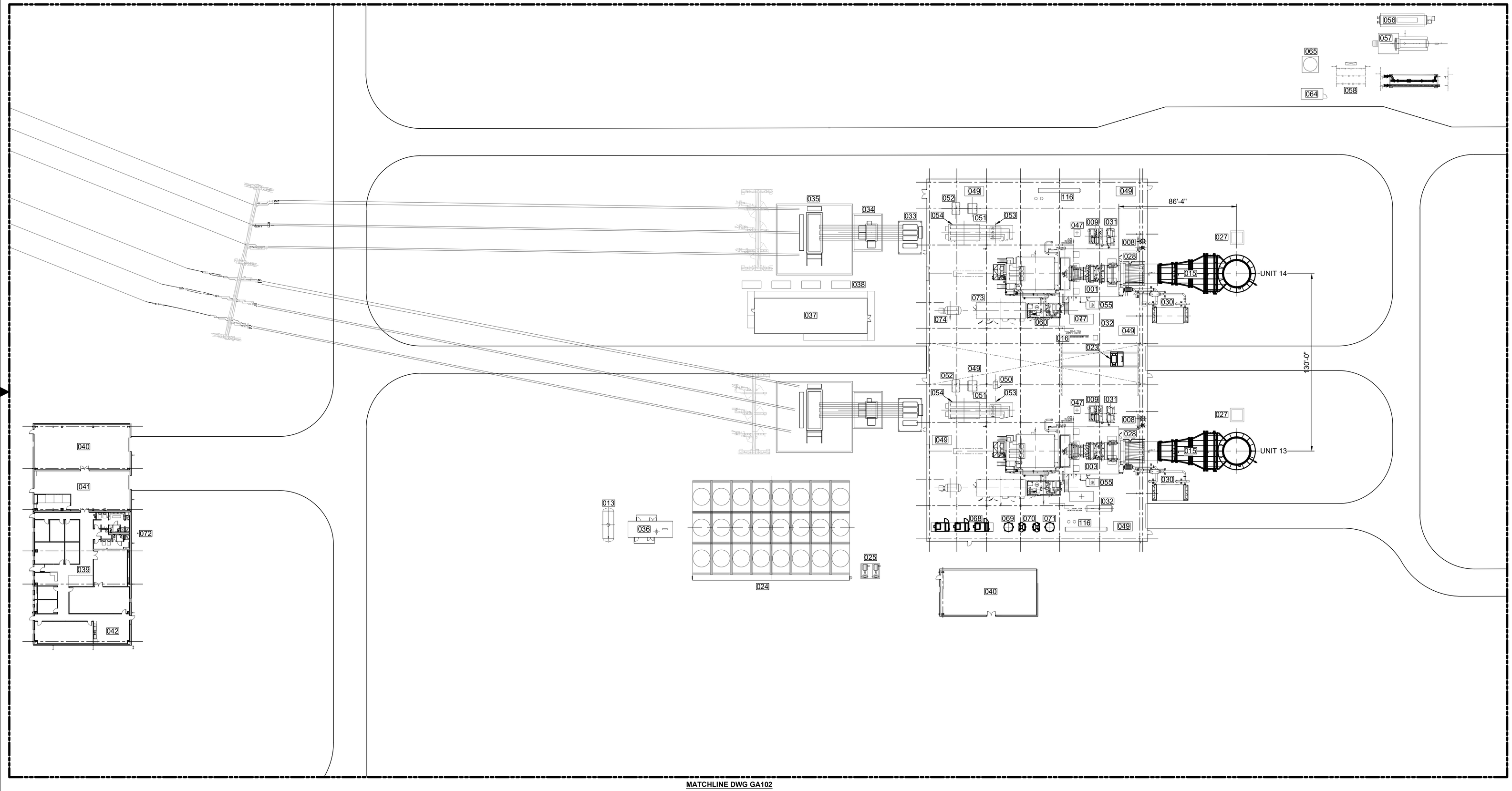
Millimeters
Scale For Microfilming
Inches

EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST		EQUIPMENT IDENTIFICATION AND LOCATION LIST	
DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT	DWG REF	DESCRIPTION NEW SITE EQUIPMENT
001	UNIT 1 GAS TURBINE (GT)	030	ROTOR AIR COOLER	045	WATER TREATMENT ENCLOSURE (SEE GA-102)	057	COALESCING FILTER SEPARATOR	073	GT ELECTRICAL PACKAGE	115	NOT USED
002	NOT USED	031	GT WATER INJECTION PUMP SKID	046	DEMINERALIZED WATER STORAGE TANK (SEE GA-102)	058	FUEL GAS REGULATING/METERING STATION BLDG	074	GT FIRE PROTECTION PACKAGE	116	PERFORMANCE HEATER
003	UNIT 2 GAS TURBINE (GT)	032	WATER WASH/FALSE START DRAINS TANK	047	GT CONTROL OIL PACKAGE	060	GT LUBE OIL PACKAGE	076	TEMP DEMIN TRAILERS (SEE GA-102)	117	RAW WATER STORAGE TANK (SEE GA-102)
008	GT FUEL GAS FILTER / SEPARATOR	033	GT GENERATOR CIRCUIT BREAKER	049	HV AIR ROTATION UNITS	061	FUEL OIL STORAGE TANK (SEE GA-102)	077	GT PORTABLE COMPRESSOR WASHING UNIT	118	RAW WATER TRANSFER PUMPS (SEE GA-102)
009	GT FUEL OIL PUMP SKID	034	GT AUXILIARY TRANSFORMER	050	SFC CROSSOVER SWITCH CUBICLE	062	FUEL OIL UNLOADING PUMPS (SEE GA-102)	078	FUEL OIL CONTAINMENT (SEE GA-102)	119	SERVICE/FIRE WATER STORAGE TANK (SEE GA-102)
013	OIL WATER SEPARATOR	035	GT GSU TRANSFORMER	051	GT SEE TRANSFORMER	063	FUEL OIL FORWARDING PUMPS (SEE GA-102)	081	WATER TREATMENT SS TRANSFORMER (SEE GA-102)	120	SERVICE WATER PUMPS (SEE GA-102)
015	CO CATALYST	036	EMERGENCY DIESEL GENERATOR	052	GT SFC TRANSFORMER	064	RTU / DAC BUILDING			121	ELECTRIC FIRE WATER PUMP (SEE GA-102)
016	SAMPLE PANEL	037	MAIN PCM	053	GT VT & SURGE CUBICLE WITH SFC SWITCH	065	SUMP TANK			122	DIESEL FIRE WATER PUMP (SEE GA-102)
023	GT CRANE	038	MAIN PCM SS TRANSFORMERS (TOTAL 4)	054	GT SEE / SFC PACKAGE	066	FUEL OIL HEATERS (SEE GA-102)			123	JOCKEY FIRE WATER PUMP (SEE GA-102)
024	CLOSED COOLING WATER FIN FAN COOLER	039	ADMINISTRATION BUILDING	055	GT AIR COMPRESSOR	068	AIR COMPRESSORS				
025	CLOSED COOLING WATER PUMPS	040	WAREHOUSE	056	FUEL GAS DEWPOINT HEATER	069	WET AIR RECEIVER				
026	NOT USED	041	MAINTENANCE SHOP			070	AIR DRYER SKIDS				
027	CEMS	042	CONTROL ROOM			071	DRY AIR RECEIVER				
028	FUEL GAS PILOT FILTER/SEPARATOR					072	SANITARY LIFT STATION				



MATCHLINE DWG GA102

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	07/31/23	WRL	-	CHANGES PER REDLINES
A	07/05/23	WRL	-	PRELIMINARY

SITE PLAN
0 30' 60'
SCALE IN FEET

PLAN NORTH 53.91° TRUE NORTH
NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.
designed W. LESNIAK
detailed

EAST KENTUCKY POWER COOPERATIVE
CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
5 x SCGT PLANT
ENLARGED SITE PLAN

project 157787 | contract
drawing GA101 – rev. B
sheet of sheets
file 157787_SCGT-GA101.DWG

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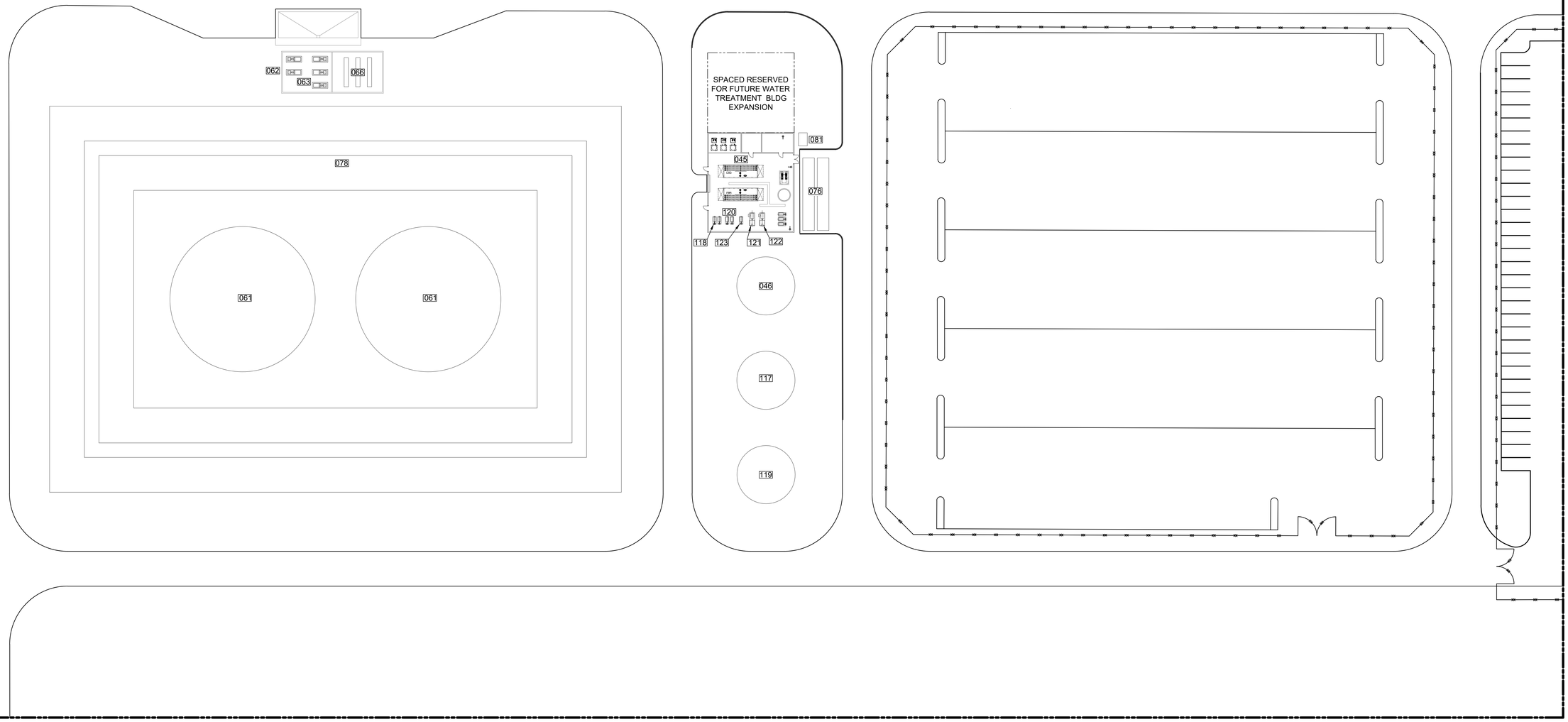
EQUIPMENT IDENTIFICATION AND LOCATION LIST	
DWG REF	DESCRIPTION NEW SITE EQUIPMENT
045	WATER TREATMENT ENCLOSURE
046	DEMINERALIZED WATER STORAGE TANK
061	FUEL OIL STORAGE TANK
062	FUEL OIL UNLOADING PUMPS
063	FUEL OIL FORWARDING PUMPS
066	FUEL OIL HEATERS
076	TEMP DEMIN TRAILERS (BY OWNER)
078	FUEL OIL CONTAINMENT
081	WATER TREATMENT SS TRANSFORMER
117	RAW WATER STORAGE TANK
118	RAW WATER TRANSFER PUMPS
119	SERVICE/FIRE WATER STORAGE TANK
120	SERVICE WATER PUMPS
121	ELECTRIC FIRE WATER PUMP
122	DIESEL FIRE WATER PUMP
123	JOCKEY FIRE WATER PUMP

MATCHLINE DWG GA101



Millimeters
Scale For Microfilming
Inches

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
B	07/31/23	WRL	-	CHANGES PER REDLINES
A	07/05/23	WRL	-	PRELIMINARY

no.	date	by	ckd	description

SITE PLAN
0 30' 60'
SCALE IN FEET

PLAN NORTH — 53.91° — TRUE NORTH
NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed
W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE
CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
5 x SCGT PLANT
ENLARGED SITE PLAN

project 157787 | contract
drawing **GA102** – rev. **B**
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file 157787_SCGT-GA102.DWG

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EQUIPMENT IDENTIFICATION AND LOCATION LIST	
DWG REF	DESCRIPTION NEW SITE EQUIPMENT
001	COMBUSTION TURBINE (CT)
002	COMBUSTION TURBINE GENERATOR (CTG)
003	CT INLET AIR FILTER
004	AC REACTOR
005	CT ACCESSORY MODULE
006	AIR PROCESSING UNIT
007	PEEC UNIT
008	FINAL FILTER SEPARATOR
009	DC LINK REACTOR
010	CT FIRE PROTECTION SKID
011	WATER WASH SKID
012	COOLING WATER MODULE
013	EXCITER / LCI COMPARTMENT
014	GENERATOR STEP-UP TRANSFORMER (GSU)
015	MOBILE EQUIPMENT CONCRETE PAD
016	CEMS SHELTER
017	CTG LCI TRANSFORMER
018	CTG EXCITER TRANSFORMER
019	COOLING WATER PUMPS
020	CO2/HYDROGEN STORAGE BOTTLE RACKS
021	GENERATOR CIRCUIT BREAKER
022	NOT USED
023	CT EXHAUST STACK
024	DEAD END
025	NOT USED
026	NOT USED
027	CT WASH WATER DRAINS TANK (BELOW GRADE)
028	MEDIUM VOLTAGE BUILDING
029	ISOPHASE BUS
030	MAIN PCM SS TRANSFORMERS (X4)

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	07/31/23	WRL	-	CHANGES PER REDLINES

no.	date	by	ckd	description

SITE PLAN
0 30' 60'
SCALE IN FEET

TRUE NORTH
56.8535°
NORTH
PLAN NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

JK SMITH POWER PLANT
5 x SCGT PLANT
ENLARGED SITE PLAN

project 157787 | contract

drawing **GA103** – rev. **A**

sheet of sheets

file 157787_SCGT-GA103.DWG

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Scale For Microfilming: Millimeters / Inches

PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	07/12/23	WRL	-	PRELIMINARY

OVERALL SITE PLAN

0 100' 200'

SCALE IN FEET

NORTH

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Company, Inc.
FIRM LICENSE NO.

designed | detailed W. LESNIAK

EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

TYGART CREEK 2 SITE
3 x 1 7FA SCGT PLANT
OVERALL SITE PLAN

project 157787 | contract

drawing **GA050** – rev. **A**

sheet of sheets

file 157787_2X1 7FA-TY-CRK2-GA050.DWG

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APPENDIX B – SCOPE ASSUMPTION MATRIX

East Kentucky Power Cooperative
Liberty RICE
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
GENERAL PROJECT INFORMATION				
Project Description	-	-	-	New 12x18 MW (or 11x20 MW) Reciprocating Internal Combustion Engine (RICE) Generator plant including all auxiliary equpment. Gross output with all engines at 100% capacity at summer design conditions shall be 216 MW (or 220 MW). Engines and most equipment will be stored indoors.
Project Location	-	-	-	Near Liberty, KY
Site Description	-	-	-	Greenfield site
Design Fuel	-	-	-	New natural gas pipeline feed with fuel oil storage tanks on site for backup
Operation	-	-	-	Peaking as required, but can be utilized for continuous service
Capacity Factor	-	-	-	20%
Contracting Approach	-	-	-	EpCm (Procurement managed by BMcD, on Owner books)
Labor	-	-	-	Union or Non-Union
Project Liquidated Damages	-	-	-	Schedule and performance for each contract
Project Bonding /LOC	-	-	-	100% Bonding.
Project COD Dates	-	-	-	May 2030
Project Expansion	-	-	-	Future Expansion space considered to the north of the proposed building location. Equipment not sized for future expansion.
Future Fuels Consideration	-	-	-	Provide option pricing for Hydrogen rated piping
MECHANICAL SYSTEMS/EQUIPMENT				
CLOSED COOLING WATER				
Cooling/Maintenance Water Tank	Y	2	100%	
Cooling Water Transfer pump	Y	2	100%	
Radiators	Y	12	100%	5 blocks per engine
Expansion Vessels	Y	12	100%	1 x 100% per generator
COMPRESSED AIR				
Instrument Air Compressors	Y	3	50%	
Starting Air Compressors	Y	3	50%	Sized to reload starting air bottles within 1.5 hours
Air Dryers	Y	2	100%	
Wet Receiver	Y	1	100%	
Dry Receiver	Y	2	100%	
Starting Air Receivers	Y	4	33%	Sized for 1 engine start per Engine for facility (assuming starting air compressors not operating)
Engine Hall Pressure Regulating Valves	Y	2	100%	
EXHAUST				
Exhaust Gas Module (EGM)	Y	12	100%	1 x 100% per generator
Selective Catalytic Reducer (SCR)	Y	12	100%	1 x 100% per generator
Exhaust Gas Probe	Y	12	100%	1 x 100% per generator
Exhaust Gas (NOx) Analyzer	Y	12	100%	1 x 100% per generator
NOx Sensor System	Y	12	100%	1 x 100% per generator
Exhaust Silencer/Stack	Y	12	100%	1 x 100% per generator
FIRE PROTECTION SYSTEM				
Design Basis	Y	-	-	NFPA 850, NFPA 37, and NFPA 30 recommended practices
Insurer/special requirements	Y	-	-	FM Global
RICE Fire Protection	Y	-	-	Water and alarm. Engine Hall to be sprinkled and supplied with fire extinguishers, detectors, and alarms
Electrical Rooms	Y	-	-	CO2 and alarm
Pump supply source(s)	Y	2	100%	Electric motor and Diesel driven fire pump taking suction from the Service/Fire Water Storage Tank. Jockey maintenance pump to maintian line pressure.
Storage	Y	-	-	Fire Water Storage Tank. Insulated with immersion heater
Fire loop	Y	-	-	Standalone fire loop, HDPE meeting NFPA
Sprinklers	Y	-	-	Provided for occupied buildings per NFPA 13 including Engine Hall, admin/office/control rooms, restrooms, mechanical room and warehouse space.
Fire/Gas Detection	Y	-	-	Where necessary per NFPA
FUEL GAS				
Supply Source	-	-	-	New pipeline from TN Gas
Compression	N	-	-	Transfer of custody point provides gas at 200 psig, 55 degF.
Metering & Regulation Yard	Y	2	100%	Provided, owned and operated by Pipeline Owner. Plant designed to support load change capability (ramp rate) from minimum load to maximum load of 4 MW/min/engine.
House Gas Regulating Skid	Y	2	100%	Provided, owned and operated by Pipeline Owner.
Dew Point Heating	Y	1	100%	Provided, owned and operated by Pipeline Owner
Fuel Gas Filter/Coalescer Skid	Y	1	100%	Provided by BMcD
RICE Generator Sets	Y	12	8.3%	Designed for peaking operation, but able to run continuously. Maximum 3 starts and 3 stops per day, per engine, 7 days a week. Designed to operate at 25% of maximum electrical rated output capacity while meeting air permit emission requirements. Inlcuded with modular pipe rack, auxiliary platforms, and all miscellaneous equipment
Compact Gas Ramp	Y	12	100.0%	
Fuel Gas Chromatograph System	Y	1	100%	Required for Wärtsilä, optional for MAN supply.
Fuel Gas Analyzer Units	Y	1	100%	
FUEL OIL				
Supply Source	-	-	-	Trucked
Fuel Oil Storage Tank	Y	2	50%	Sized for 72 hrs of operation at full load (assuming no fuel gas available). Located within secondary containment structure. Provided with leak detection.
Fuel Oil Unloading Pumps	Y	3	50%	
Fuel Oil Forwarding Pumps	Y	3	50%	
Fuel Oil Heater	Y	2	50%	Fuel oil will be utilized primarily when temperatures drop below 10 degF. Confirm heater sizing and fuel oil consumption.
HVAC SYSTEMS				

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Building electric heaters, exhaust fans and intake louvers, air-conditioning	Y	TBD	100%	As required for occupied buildings and electrical rooms
INTAKE AIR					
	Charge Air Filters	Y	24	50%	2 x 50% per generator
LUBE OIL SYSTEM					
	New Oil Tank	Y	1	100%	Includes immersion heater
	Lube Oil Filter	Y	1	100%	
	Service/Used Oil Tank	Y	1	100%	
	Waste Oil Tank	Y	1	100%	
	Lube Unloading Pumps	N	0	100%	Lube Oil Tankers have integral lube oil unloading pumps.
	Lube Oil Transfer Pumps	Y	2	100%	Provided by OEM
	Lube Oil Cooler	Y	12	100%	1 x 100% per generator
	Engine Auxiliary Module (EAM)	Y	12	100%	1 x 100% per generator
	Oil Mist Separator	Y	12	100%	1 x 100% per generator
	Mobile Lube Oil Pump	Y	1	100%	
MAKE-UP WATER					
	Supply Source	-	-	-	City potable water
	Service/Potable Water Booster Pump	Y	1	100%	
	Fire Water Storage	Y	1	100%	Firewater tank dedicated fire water capacity
	Service Water Transfer Pumps	N	0	100%	
POTABLE WATER SYSTEM					
	Supply Source	Y	-	-	City tap, assumes sufficient flow capacity
	Potable Water Bladder Tank	Y	1	100%	
	Potable Water Heater	Y	1	100%	Instantaneous Heater for SSEWs
	Emergency Eye Wash/Safety Showers	Y	5	100%	Battery Room, Unloading, Urea, Maintenance Water Tanks
SANITARY SEWER SYSTEM					
	Sanitary Lift Station	Y	1	100%	Supplied with 2 x 100% pumps
	Sanitary Treament Facility	Y	1	100%	Waste Holding Tank
UREA SYSTEM					
	Urea Flow Control Skid	Y	1	100%	
	Urea Forwarding Pump Skid	Y	2	100%	
	Urea Storage Tank	Y	2	50%	Sized for the greater of 7 days of station operation at full load on natural gas, or 3 days of operation on ULSD
	SCR Ammonia Distribution Grid	N	0	100%	
	SCR Catalyst	Y	12	100%	1 x 100% per generator
	Leak Detection	Y	2	-	Each Tank
WASTEWATER					
	Contaminated Wastewater	Y	-	-	Drains for areas around equipment that could be contaminated with oil will be directed through an oil/water separator (OWS). Discharge OWS effluent to Holding Tank.
	Wastewater Tank	N			
	Waste Water Sump Pump	N			
	Oil Water Separator (OWS)	Y	1	100%	Included 2 x 50% sump pumps
	Water Treatment Reject	N	-	-	
CATHODIC PROTECTION					
	Underground Steel Piping	Y	-	-	Cathodic protection system will be galvanic anode type, if required.
	Underground Steel Tanks	Y	-	-	
CONTROLS					
Equipment Control					
	RICE	Y	-	-	Control system provided by equipment OEM with local HMI
	Medium Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Motor Control Centers	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Low Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Plant Control System	Y	-	-	Provided system will link all RICE controllers and HMI application servers. Provided with redundant ethernet to application servers. Will utilize OEM PCS.
	Plant Historian	Y	-	-	Provided by OEM. Include Pi historian as well.
	Offsite Interfaces	Y	-	-	Dispatching, OEM Monitoring, EKPC Monitoring
Automatic Generation Control					
	Distributed Control System (DCS)	N			OEM will provide PCS with balance of plant equipment integration.
Vibration monitoring					
	RICE	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	BOP Critical and High Speed Motors	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers, if required.
Plant Simulator		Y	-	-	EKPC to follow up with what is included with other simulator designs within fleet.
Digital Bus					
	Foundation Fieldbus	N	-	-	
	Remote I/O	Y	-	-	
Instrumentation					
	Transmitters	Y	-	-	4-20 mA as available.
	HART	Y	-	-	Install tri-loops on valves for feedback.
	Performance Testing	Y	-	-	
	Meteorological Station	Y	-	-	Provided by OEM.
Continuous Emissions Monitoring System		Y	12	100%	1x100% per stack. Datalink to DCS. Cabinet style CEMS (1 per stack)
Relaying Data Link		Y	-	-	Redundant relay communications network for protection and control. See Equipment Control section for equipment / relay interfaces to the control system.
Communication					
	Dispatching	Y	-	-	Automatic Generation Control through RTU communication. BMcD to include RTU in Estimate as Owner Costs.
	Off site monitoring/administrations	Y	-	-	OEM for RICE Controller Remote Connection
	Switchyard	Y	-	-	Communication Interface with Switchyard RTU

East Kentucky Power Cooperative
Liberty RICE
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Internal plant	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
	External	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
NERC CIP Requirements		Y	-	-	Low impact.
HMI		Y	-	-	Stand Alone Controllers with local HMI's. Plant Control HMI located in New Control Room and Switchgear building.
ELECTRICAL					
Generator Step-Up Transformers:					
	RICE	Y	2	100%	Two (2) three-winding GSU transformers. Each transformer services 6 RICE engines with 3 generators per secondary / tertiary winding.
Auxiliary/Reserve Transformers:					
	Auxiliary Transformer	Y	4	100%	2x100% for every 6 engines.
Generator Buses:					
	13800V Switchgear	Y	4	100%	One switchgear bus per 3 generators. Switchgear connected to the associated GSU transformer via cable bus. Feeder breakers to auxiliary transformers will be provided to serve station power.
Generator Circuit Breakers:					
	RICE	Y	12	100%	Switchgear circuit breakers will serve as generator circuit breaker and provide synchronization.
Blackstart Generator(s) and Capability		N	-	-	Standby auxiliary generator only.
Electrical Equipment Enclosures:		Y	1	100%	Most electrical equipment will be located inside electrical room in Engine Hall. Medium voltage bus housed in standalone electrical building.
Switchgear:					
	480V Switchgear	Y	4	100%	Two (2) lineups configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
Motor Control Centers:					
	480 V MCCs	Y	-	-	Rated for operating load
Emergency Power:					
	Uninterruptible Power (UPS)	Y	-	-	A single Balance of Plant UPS system will be provided.
	DC System	Y	1	100%	Primary and secondary power source from 24 VDC panel which feeds into active redundancy module. The 24 VDC feed from the active redundancy module provides two power supplies to the PLC system. Included with 2x100% DC battery chargers
	Standby Auxiliary Generator	Y	1	100%	Sized to support loss of power to facility
Stand Alone Control Systems					
	Fire Protection/Detection	Y	-	-	See fire protection section in Mechanical for details
	Plant HVAC	Y	-	-	See HVAC section in Mechanical for details
	Building/Site Security	Y	-	-	
	Plant Communications	Y	-	-	
On-Line Battery Monitoring:		Y			
Lighting					
	Normal	Y	-	-	LED-lighting; lighting required for new road and plant buildings.
	Emergency Egress	Y	-	-	Local battery pack fixtures will be provided for emergency egress.
Grounding		Y	-	-	New grounding grid
Lightning Protection		Y	-	-	A UL Master Label will be provided for the new facility.
Freeze Protection		Y	-	-	Heat tracing designed to maintain 40F for fluids subject to freezing based on size and service
Electrical Studies:					
	Load Flow, voltage drop, short circuit	Y	-	-	Identify equipment and bus loading, motor terminal voltages and available fault currents at each voltage level
	Protective coordination/relay settings	Y	-	-	
	Arc Flash	Y	-	-	
Cabling		Y	-	-	Cable tray and field routed conduit above grade, duct bank below grade
Transmission / Interconnection:		Y	-	-	Discuss in separate scope review.
CIVIL/STRUCTURAL					
Existing Facilities		N	-	-	Greenfield site. Topographic and property survey required.
Layout Considerations		Y	-	-	Sufficient room for future expansion considered. Tie-ins to new gas pipeline and transmission.
Disposal of Spoils		-	-	-	Excess spoils will be disposed of on-site, used for fill if possible. No hazardous materials accounted for in project estimate.
Soils Conditions / Stability		Y	-	-	
Soil Improvement		Y	-	-	
Subsurface Rock		Y	-	-	
Subsurface water		Y	-	-	Possible dewatering may be needed - geotechnical report utilize to determine.
Cut/Fill		Y	-	-	Use existing site materials to grade the site and avoid off-site borrow.
Disposal of debris		-	-	-	Disposed of on-site.
Permanent Stormwater		-	-	-	New stormwater to be collected in ditches and control surfaces, and routed to new permitted outfall
Construction Stormwater		Y	-	-	Erosion control will be in accordance with state and local guidelines and regulations and will include best management practices such as silt fence, rock check dams, slope protection, construction exits, and stormwater pond(s) for construction and permanent. A SWPPP will be prepared.
Roads		Y	-	-	All new roads for site
Surfacing		-	-	-	Main access roads shall be paved with asphaltic concrete. Maintenance roads and areas will be covered with crushed rock. Other areas top soil and seeded.
Soil Bearing Capacity		-	-	-	Determined by Geotech report.
Foundation type		-	-	-	Determined by Geotech report.
Transformer Containment		Y	-	-	Containment for oil-filled transformer will be provided with an open pit design.
Guardshack		Y	-	-	New guard shack
Enclosures					

East Kentucky Power Cooperative
Liberty RICE
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Engine Hall	Y	1	-	Building housing engines with separate rooms for electrical, administrative, mechanical, battery storage. Includes ridge vent and bridge crane.
	Warehouse	Y	1	-	PEMB adjacent to Engine Hall, approx. 50' x 100'
	Fire Pump	Y	1		
	Medium Voltage Buildings	Y	2		qty = 2
	CEMS Enclosure	N			
	Guard Shack	Y	2		Main security guard shack incorporate utilities for restrooms. Construction entrance guard shack will not.
Maintenance cranes		Y	-	-	Engine hall bridge crane
Site Security		Y	-	-	Cameras, badge access for all doors. Include costs for 24/7 security during construction
Landscaping		Y	-	-	Berm and Landscaping between plant and neighbors.
Fence		Y	-	-	New fence around perimeter of new plant facilities. Automated slide gate at facility entrance.
CONSTRUCTION					
Utilities					
	Power	Y	-	-	Construction power from aux. generators
	Communication	Y	-	-	Cellular
	Construction Water	Y	-	-	Trucked until City potable tie-in connection is commissioned
	Potable Water	Y	-	-	Trucked until City potable tie-in connection is commissioned
	Sanitary	Y	-	-	Portable facilities provided by construction contractors
Parking		Y	-	-	New permanent parking adjacent to engine hall. Temporary construction parking to be identified.
Gate Entry					
	Main	Y	-	-	New guard shack
	Personnel/Craft	Y	-	-	New main gate/construction entrance
	Delivery	Y	-	-	New slide gate for construction and operation entrances
Construction Field Office / Trailers					
	Owner	Y	-	-	Will include Trailers in Owners Costs sheet.
	Engineer	Y	-	-	Will include Trailers in Owners Costs sheet.
	Vendors	Y	-	-	Will include Trailers in Owners Costs sheet.
	Contractors	N	-	-	Will include Trailers in Owners Costs sheet. Contractors provide their own Trailers.
	Site Services	Y	-	-	Cleaning, snow removal, dumpsters, etc.
Laydown area		Y	-	-	On site areas to be identified with easements located
Warehouses		Y	-	-	Contractor will provide necessary storage space during construction.
OWNER COSTS / MISC.					
Permits					
	See Permit Matrix	Y	-	-	BMcD to include
Owner's Costs					
	Project Development	Y	-	-	Allowance to be included
	Owner's Operations Personnel	Y	-	-	Allowance to be included
	Owner's Project Management	Y	-	-	Allowance to be included
	Owner's Engineer	N			
	Owner's Legal Counsel	Y	-	-	Allowance to be included
	Political Concessions / Area Development Fees	Y	-	-	Allowance to be included
	Permitting & License Fees	Y	-	-	Allowance to be included
	Land	Y	-	-	Allowance to be included
	Water Rights Costs	Y	-	-	Allowance to be included
	Water Infrastructure and Supply to Site	Y	-	-	New City potable water for supply
	Natural Gas Infrastructure and Supply to Site	N	-	-	New pipeline, captured in separate project scope costs.
	Labor Camp	N			
	Permanent Plant Operating Spare Parts	Y	-	-	Allowance to be included
	Maintenance Tools & Equipment	Y	-	-	Allowance to be included
	Permanent Plant Equipment & Furnishings	Y	-	-	Allowance to be included
	Sales Tax	Y	-	-	Sales tax is excluded, other than for non-permanent consumables and supplies
	Escalation	Y	-	-	Allowance to be included
	Owner's Contingency	Y	-	-	Allowance to be included
	Interest During Construction	N			Excluded
	Temporary Utilities	Y	-	-	Included in EPC costs
	Startup Testing Fuels and Consumables	Y	-	-	Allowance to be included
	Operator training	Y	-	-	Allowance to be included
	Site Security	Y	-	-	Allowance to be included
EXCLUSIONS					
	Taxes	-	-	-	Sales, use, gross receipts, property, and other types.
	Insurance	-	-	-	All insurance other than General Liability being carried as a project cost
	Sound abatement above normal supply	-	-	-	Performing a sound analysis to help determine necessity.
	Aesthetic landscaping other than erosion control	-	-	-	Included in landscaping costs.
	High escalation assocated with extreme market	-	-	-	
	Financing fees	-	-	-	
	Interest during construction	-	-	-	

East Kentucky Power Cooperative
Smith 2x1 Combined Cycle
Scope Assumptions Matrix

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	Y/N	Number	% Capacity (per Unit)	Notes
GENERAL PROJECT INFORMATION				
Project Description	-	-	-	New 2x1 dual fuel combined cycle combustion turbine power plant consisting of two (2) advanced F-class combustion turbines (CTGs), two (2) heat recovery steam generators (HRSGs), a single condensing steam turbine generator (STG), and an air-cooled condenser (ACC). The new CTGs, STG, HRSGs, and associated auxiliary equipment will be located indoors.
Project Location	-	-	-	Clark County, KY.
Site Description	-	-	-	Existing brownfield site at Smith Station.
Design Fuel	-	-	-	Existing natural gas pipeline at site with fuel oil backup (ultra low sulfur diesel)
Heat Rejection	-	-	-	New air-cooled condenser
Operation	-	-	-	Baseloaded with outages for maintenance
Capacity Factor	-	-	-	90%
Contracting Approach	-	-	-	Multi-prime.
Labor	-	-	-	Union or Non-Union.
Project Liquidated Damages	-	-	-	Schedule and performance for each contract.
Project Bonding /LOC	-	-	-	100% Bonding.
Project COD Dates	-	-	-	2030
Project Expansion	-	-	-	Future expansion considered. Not shown on General Arrangement.
MECHANICAL SYSTEMS/EQUIPMENT				
AQUEOUES AMMONIA SYSTEM				
Ammonia Flow Control Skid	Y	2	100%	One per HRSG.
Ammonia Forwarding Pump Skid	Y	3	100%	One per HRSG plus common spare
Ammonia Storage Tank	Y	1	100%	
Ammonia Unloading Skid	Y	1	100%	
SCR Ammonia Distribution Grid	Y	2	100%	One per HRSG.
SCR Catalyst	Y	2	100%	
Detection	N	-	-	
AUXILIARY STEAM				
Aux Steam Electric Superheater	Y	1	100%	
Aux Boiler	Y	1	100%	Natural gas-fired for plant startup
Aux Boiler Deaerator	Y	1	100%	
Aux Boiler Blowdown Tank	Y	1	100%	
Aux Boiler Forced Draft (FD) Fan	Y	1	100%	
Aux Boiler Feedwater Pumps	Y	2	100%	
Aux Boiler Sample Analysis Panel	Y	2	100%	
CLOSED COOLING WATER (CCW)				
Air-Cooled Heat Exchanger (ACHE)	Y	1	100%	
CCW Pumps	Y	2	100%	
CCW Head Tank	Y	1	100%	
Glycol type	Y	-	-	Propylene
CTG Cooler	Y	4	25%	
CTG Lube Oil Cooler	Y	2	50%	
BFP Heat Exchanger	Y	2	100%	
HRSG Recirc Pump Heat Exchanger	Y	2	100%	
COMPRESSED AIR				
Air Compressors	Y	3	50%	Air-Cooled, Oil-Free, Rotary Screw
Air Dryer/Filters	Y	2	100%	Twin-Tower, Heatless Desiccant with pre- and after-filters
Wet Air Receiver	Y	1	100%	
Dry Air Receiver	Y	1	100%	
CONDENSATE SYSTEM				
Air-Cooled Condenser (ACC)	Y	1	100%	Single pressure, two-stage design, sized for full load operation at max ambient conditions as defined by Heat Balance, and will include provisions for HRSG warm-up and 100% steam bypass. Includes: Hot box connection with distribution ducts, motor-actuated sectionalizing valves and drains, fin tube bundles and tube cleaning system, 2-100% liquid ring vacuum pumps, condensate collection headers, steal support structure, two-speed fans, fan deck, platforms and stairs
ACC Condensate Storage Tank	Y	1	100%	
Condensate Pumps	Y	3	50%	Vertical can-type
Gland Steam Condenser	Y	1	100%	
Steam Turbine Flash Tank	Y	1	100%	
CYCLE CHEMICAL FEED				
Ammonia/Amine System	Y	2	100%	
Phosphate System	Y	6	50%	3x50% per HRSG
Oxygen Scavenger System	Y	2	100%	Includes 2x100% feed pumps
DEMINERALIZED WATER SYSTEM				
Demineralized Water Transfer Pumps	Y	2	100%	
Demineralized Water Storage Tank	Y	1	100%	Field erected tank. Sizing based on steam cycle makeup, evaporative cooler makeup, and NOx water injection (while firing on fuel oil)
Reverse Osmosis (RO) Prefilters	Y	2	100%	
Two-Pass RO Skids	Y	2	100%	Skids include booster pumps
Mixed Bed Demineralization System	Y	2	100%	
Clean in Place (CIP) System	Y	1	100%	Includes tank, heater, cartridge filter and forwarding pump
Chemical Dosing Skids	Y	9	100%	Each skid will have 2x100% or 3x50% redundancy. Chemicals as required based on source water quality.
Chemical Totes	Y	9	100%	
FEEDWATER SYSTEM				
Feedwater pumps	Y	4	100%	With interstage bleed and control valves. Designed for max flow during full load operation with both combustion turbines and full steam turbine bypass. 2x100% for each HRSG (100% capacity defined by max unfired demand with STG bypass)
FIRE PROTECTION				
Design Basis	Y	-	-	NFPA 850 recommended practice.
Insurer/special requirements	Y	-	-	FM Global
CTG Fire Protection	Y	-	-	CO2 and alarm
Electrical Equipment Rooms / PCMs	Y	-	-	CO2 and alarm

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		Y/N	Number	% Capacity (per Unit)	Notes
	Pump supply source(s)	Y	2	100%	Electric motor and Diesel driven fire pump taking suction from the Service/Fire Water Storage Tank. Jockey pump to maintain header pressure and for small leaks.
	Storage	Y	1	100%	Combined Service/Fire Water Storage Tank fed from makeup water source
	Fire loop	Y	-	-	Standalone fire loop
	Sprinklers	Y	-	-	Provided for occupied buildings per NFPA 13 including admin/office areas, laboratories, restrooms and warehouse space. A Pre-action sprinkler system will be provided for STG bearing protection. A deluge spray system will be provided for STG lube oil storage tank and piping.
	Foam System	N	-	-	
	Smoke/heat detectors	Y	-	-	Where necessary or recommended by NFPA
	Fire walls	Y	-	-	2-hr fire walls where required by NFPA
FUEL OIL					
	Storage Tank	Y	2	50%	Field Erected tank sized for 72 hours of GT operation at full load. Additional tank capacity of 8 hours of continuous operator of backup diesel generator. Located within seconary containment structure
	Transfer Pumps	Y	3	100%	1 x 100% for each combustion turbine unit with 1 x 100% common spare located near fuel oil tank.
	Unloading Pumps	Y	3	100%	Two (2) truck unloading stations. 1 x 100% unloading pump for each unloading station with 1 x 100% common spare.
	Heating	Y	3	50%	3 x 50% inline electric heaters with recirculation system. Each heater sized for 50% of total plant fuel oil flow (all three units).
	Duplex Filter	Y	2	100%	One skid for each CTG (provided by CTG supplier)
	Meter	Y	2	100%	One for each CTG (provided by CTG supplier)
HVAC SYSTEMS					
	Building electric heaters, exhaust fans and intake louvers, air-conditioning	Y	TBD	100%	As required for occupied buildings and electrical rooms
MAKE-UP WATER					
	Supply Source	-	-	-	Existing onsite clarified water fed from Kentucky River. Tie point will be downstream of existing clarifier
	Clarified Water Transfer Pumps	Y	2	100%	
	Clarified Water Storage Tank	Y	1	100%	
	Clarified Water Ultra Filtration (UF) Filters	Y	2	100%	
	UF Backwash Tank	Y	1	100%	
	UF Backwash Pumps	Y	2	100%	
	Chemical Feed Pumps	Y	8	100%	Chemicals as required based on source water quality
	Chemical Totes	Y	4	100%	
	Service/Fire Water Storage	Y	1	100%	Field erected tank, includes immersion heater(s) and insulation. Standpipe for dedicated fire water volume.
	Service Water Transfer Pumps	Y	2	100%	
NATURAL GAS					
	Off-site Pipeline	N	-	-	Natural gas available at an interconnection at/near the site boundary.
	Compression	N	-	-	
	Metering & Regulation	Y	2	100%	
	Dew Point Heating	Y	2	100%	1 x 100% per CTG. Natural gas fired dew point heaters
	Combustion Gas Turbine (CTG)	Y	2	50%	Dual fuel rated (natural gas and ULSD) F-class gas turbine generators provided with inlet silencers, air filtration systems, low Nox combustors, lube oil systems, hydraulic oil systems, starting systems, acoutical enclosures with HVAC, controls, fire protection and fuel systems
	Fuel Gas Filter Separator	Y	2	100%	
	Fuel Gas Metering Skid	Y	2	100%	
	Fuel Gas Pilot Fuel Filter Separator Skid	Y	2	100%	
	Fuel Gas Heater Skid	Y	2	100%	
	Fuel Gas Knockout Drum	Y	2	100%	
	Fuel Gas Filter Separator Skid	Y	1	100%	Supply gas filter separator and drains tank
	Fuel Gas Drains Tank	Y	2	100%	1x100% per CTG
NITROGEN					
	Nitrogen Bottles, Distribution Manifold	Y	1	100%	
POTABLE WATER					
	Supply Source	Y	-	-	City tap, assumes sufficient pressure and flow
	Emergency Eye Wash/Safety Showers	Y	14	100%	
	Potable Water Water Heater Tanks	Y	7	100%	
SAMPLE ANALYSIS					
	Sample Analysis Panel	Y	1	100%	Sample cycle make-up, reclaim water supply, condensate pump discharge and after chemical feed, HRSG water and steam, BFP suction and discharge, and wastewater discharge
	Sample Analysis Cooler	Y	1	100%	
SANITARY SEWER					
	Sanitary Lift Station	Y	1	100%	Lift station includes 2x100% sewage pumps
	Sanitary Sewer Pumps	Y	2	100%	
	Sanitary Treatment Facility	Y	1	100%	Biotreatment of sanitary waste prior to effluent to existing wastewater outfall
STEAM					
	Steam Turbine Generator (STG)	Y	1	100%	Multi-stage, reheat, straight-condensing steam turbine including HP, reheat, and LP steam from HRSG's. Provided with stop and control valves, non-return valves, hydraulic control oil systems, lube oil systems, exhaust hood spray system, gland steam system including condenser with exhausters, turning gear, water induction prevention, and turbine control system with DCS interface
	STG Atmospheric Drains Tank	Y	1	100%	
	Heat Recovery Steam Generator (HRSG)	Y	2	50%	Triple pressure level, reheat, natural circulation type with horizontal gas turbine exhaust flow through vertical tube heat transfer sections. Includes SCR and CO/VOC catalysts. Self-supported stacks with ports for emision monitoring, platforms and ladder access. Water chemistry controlled via continuous blowdown and chemical addition as required.
	Turbine Gland Steam Condenser Module	Y	1	100%	
WASTEWATER					

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		Y/N	Number	% Capacity (per Unit)	Notes
	Contaminated Wastewater	Y	-	-	Drains for areas around equipment that could be contaminated with oil will be directed through an oil/water separator.
	Oil/water Separator (OWS)	Y	1	100%	OWS includes 2x100% pumps. Effluent discharged to existing outfall
	Plant Drains Sump Pumps	Y	7	100%	Sumps and sump pumps as required
	Washwater/False Start Drains Tank	Y	2	100%	1x100% per CTG
	Blowdown/Recycle Tank	Y	1	100%	Recover steam drum blowdown and recycle into influent water treatment system
	Recycle Pumps	Y	2	100%	
CATHODIC PROTECTION					
	Underground Steel Piping	Y	-	-	Cathodic protection system will be galvanic anode type, if required.
	Underground Steel Tanks	Y	-	-	Coated with sacrificial anodes, if required.
DEMOLITION		Y	-	-	Existing buried utilities for coal plant will be demolished as required for new design
CONTROLS					
Equipment Control					
	CTG	Y	-	-	Control system provided by equipment OEM with local HMI for each CTG
	STG	Y	-	-	Control system provided by equipment OEM with local HMI
	Medium Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Motor Control Centers	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Low Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Plant Control System	Y	-	-	Provided system will link all CTG and STG controllers and HMI application servers. Provided with redundant ethernet to application servers.
	Plant Historian	Y	-	-	
	Offsite Interfaces	Y	-	-	Dispatching, OEM Monitoring, EKPC Monitoring
Automatic Generation Control		Y			
	Distributed Control System (DCS)	Y	1	100%	Balance of Plant controls same as CTG and STG control for Siemens. Separate DCS would be needed for GE turbines.
Vibration monitoring					
	CTG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	STG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	BOP Critical and High Speed Motors	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
Plant Simulator		Y	-	-	EKPC to confirm.
Digital Bus					
	Foundation Fieldbus	N	-	-	
	Remote I/O	Y	-	-	
Instrumentation					
	Transmitters	Y	-	-	
	HART	Y	-	-	Install tri-loops on valves for feedback.
	Performance Testing	Y	-	-	
	Meteorological Station	N	-	-	
Continuous Emissions Monitoring System		Y	2	100%	1x100% per stack. Datalink to DCS
Relaying Data Link		Y	-	-	Redundant relay communications network for protection and control. See Equipment Control section for equipment / relay interfaces to the control system.
Communication		Y	-	-	Datalinks for Battery Monitoring, Gas Yard, Gas Compressors/Dewpoint Heaters, Air Compresors, CEMS
	Dispatching	Y	-	-	Automatic Generation Control through RTU communication
	Off site monitoring/administrations	Y	-	-	OEM for Turbine Controller Remote Connection
	Switchyard	Y	-	-	Communication Interface with Switchyard RTU
	Internal plant	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
	External	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
NERC CIP Requirements		Y	-	-	EKPC to confirm. E.g. CIP low, medium, etc.
HMI		Y	-	-	Stand Alone Controllers with local HMI's. Plant Control HMI located in New Control Room, Admin DCS Room and Switchgear building.
ELECTRICAL					
Generator Step-Up Transformers:					
	Gas Turbine	Y	2	100%	1x100% for each CTG
	Steam Turbine	Y	1	100%	
Auxiliary/Reserve Transformers:					
	Gas Turbine	Y	2	100%	1x100% for each CTG
Generator Buses:					
	Gas Turbine	Y	2	100%	Isolated Phase Bus: 1x100% for each CTG
	Steam Turbine	Y	1	100%	Isolated Phase Bus: 1x100% for STG
Generator Circuit Breakers:					
	Gas Turbine	Y	2	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
	Steam Turbine	Y	1	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
Blackstart Generator(s) and Capability		N	-	-	
Electrical Equipment Enclosures:		Y	-	-	Base scope will house electrical equipment inside power building, ACC building, or water treament building.
Switchgear:					
	4160V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
	480V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
Motor Control Centers:					
	480 V MCCs	Y	-	-	Rated for the operating load
Emergency Power:					
	Uninterruptible Power (UPS)	Y	-	-	A single Balance of Plant UPS system will be provided for the STG and BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
	DC System	Y	-	-	A single Balance of Plant DC system will be provided for the STG and BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
Standby Diesel Generator		Y	-	-	Standby diesel generator rated for OEM and BOP Essential operating loads as well as heat trace to maintaining a safe shutdown condition.
Stand Alone Control Systems					
	Fire Protection/Detection	Y	-	-	See fire protection section in Mechanical for details
	Plant HVAC	Y	-	-	See HVAC section in Mechanical for details

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		Y/N	Number	% Capacity (per Unit)	Notes
	Building/Site Security	Y	-	-	
	Plant Communications	Y	-	-	
On-Line Battery Monitoring:		Y	-	-	
Lighting					
	Normal	Y	-	-	LED-lighting; lighting required for new road and plant buildings.
	Emergency Egress	Y	-	-	Local battery pack fixtures will be provided for emergency egress.
Grounding		Y	-	-	Brownfield site. New grounding grid with ties to the existing plant grid as applicable.
Lightning Protection		Y	-	-	A UL Master Label will be provided for the new facility.
Freeze Protection		Y	-	-	Heat tracing designed to maintain 40F for fluids subject to freezing based on size and service
Electrical Studies:					
	Load Flow, voltage drop, short circuit	Y	-	-	Identify equipment and bus loading, motor terminal voltages and available fault currents at each voltage level
	Protective coordination/relay settings	Y	-	-	
	Arc Flash	Y	-	-	
Cabling		Y	-	-	Cable tray and field routed conduit above grade, duct bank below grade
Transmission / Interconnection:		N	-	-	Per EKPC
CIVIL/STRUCTURAL					
Existing Facilities		Y	-	-	Brownfield site. Tie into existing Smith system (roads, storm drainage). Topographic survey of the plant areas will be required.
Layout Considerations		Y	-	-	Reuse part of existing infrastructure and road from previous coal plant construction
Disposal of Spoils		-	-	-	Excess spoils will be disposed of on-site, used for fill if possible. No hazardous materials accounted for in project estimate.
Soils Conditions / Stability		-	-	-	New combined cycle will be in area of coal-fired unit. No geotechnical information provided for coal-fired unit area. Estimate assumptions generally based on geotechnical information for existing Units -12 combustion turbines.
Soil Improvement		N	-	-	No soil improvement is assumed
Subsurface Rock		N	-	-	Assume no rock excavation required.
Subsurface water		N	-	-	No dewatering included.
Cut/Fill		-	-	-	Use existing site materials to grade the site and avoid off-site borrow.
Disposal of debris		-	-	-	Disposed of on-site. However, debris from the existing foundation demolition and existing buried piping demolition would have to be transported to a permitted facility or the facility on-site would have to be pemitted for this use.
Permanent Stormwater		-	-	-	Existing. New surface water drainage ditches and piping to collect and direct to offsite outfall. Regrading as required to follow existing drainage paths.
Construction Stormwater		-	-	-	Erosion control will be in accordance with state and local guidelines and regulations and will include best management practices such as silt fence, rock check dams, slope protection, construction exits, and stormwater pond(s) for construction and permanent. A SWPPP will be prepared.
Roads		N	-	-	Existing plant roads to allow for deliveries via truck.
Surfacing		-	-	-	Main access roads shall be paved. Maintenance roads and areas will be covered with crushed rock. Other areas top soil and seeded.
Soil Bearing Capacity		-	-	-	Soil bearing capacity not available. To be determined by geotechnical investigation. Foundation types assumed as noted below based on an allowable bearing capacity of approximately 2,500 psf.
Foundation type		-	-	-	Assume CTG, STG, HRSG, ACC, and Generation Building will be pile-supported. All other equipment/structures will be supported on shallow foundations (mats or footings). A geotechnical investigation will be needed to confirm these assumptions.
Transformer Containment		-	-	-	Containment for oil-filled transformer will be provided with an open pit design.
Demolition (Foundation)		Y	-	-	See "Disposal of debris" and "Disposal of Spoils" sections above.
Enclosures					
	Generation Building	Y	1	100%	Building housing CTG, HRSG, STG, and Aux Boiler (including control room, warehouse space, administrative space with offices, and machine shop) Building cranes included for CTG and STG
	Water Treatment Building	Y	1	100%	Building housing water treament equipment and fire water pumps
	ACC Building	Y	1	100%	Building to house ACC equipment and electrical
	Electrical (see electrical section)	Y	-	-	
	Warehouse/Admin Facilities	Y	1	100%	
	Maintenance Shops	Y	1	100%	
Maintenance cranes		Y	-	-	
Guardshack		N			Existing Smith gaurdshack used.
Site Security		-	-	-	Included in Owner's costs
Landscaping		-	-	-	Minimal landscaping included. Disturbed areas will be seeded for erosion control.
Fence		N			Assume existing perimeter security fence is adequate for new plant
CONSTRUCTION					
Utilities					
	Power	Y	-	-	Construction power from existing J.K Smith facility
	Communication	Y	-	-	Tie-in to existing system
	Construction Water	Y	-	-	Tie-in to existing J.K. Smith facility service water system
	Potable Water	Y	-	-	Tie-in to existing J.K. Smith facility potable water system
	Sanitary	Y	-	-	Portable facilities provided by construction contractors
Parking		Y	-	-	New permanent parking adjacent to Generation building and Water Treament building. Temporary construction parking to be identified.
Gate Entry					
	Main	-	-	-	Existing Smith guard shack.
	Personnel/Craft	-	-	-	Existing Smith main gate and guard shack.
	Delivery	-	-	-	New slide gate for construction.
Construction Field Office / Trailers					
	Owner	Y	-	-	Trailers in Owners Costs.
	Engineer	Y	-	-	Trailers in Owners Costs.
	Vendors	Y	-	-	Trailers in Owners Costs.
	Contractors	Y	-	-	Trailers in Owners Costs.
	Site Services	Y	-	-	Trailers in Owners Costs.
Laydown area		Y	-	-	On site areas to be identified

East Kentucky Power Cooperative
Smith 2x1 Combined Cycle
Scope Assumptions Matrix

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	Y/N	Number	% Capacity (per Unit)	Notes
Warehouses	Y	-	-	Existing warehouse is full; Contractor will provide necessary storage space during construction.
OWNER COSTS / MISC.				
Permits				
See Permit Matrix	Y	-	-	EKPC w/ BMcD Support.
Owner's Costs				
Project Development	Y	-	-	Allowance to be included
Owner's Operations Personnel	Y	-	-	Allowance to be included
Owner's Project Management	Y	-	-	Allowance to be included
Owner's Engineer	N	-	-	
Owner's Legal Counsel	Y	-	-	Allowance to be included
Political Concessions / Area Development Fees	Y	-	-	Allowance to be included
Permitting & License Fees	Y	-	-	Allowance to be included
Land	N	-	-	Brownfield, existing
Water Rights Costs	Y	-	-	Allowance to be included
Water Infrastructure and Supply to Site	N	-	-	Existing
Natural Gas Infrastructure and Supply to Site	N	-	-	N/A, reuse existing
Labor Camp	N	-	-	
Permanent Plant Operating Spare Parts	Y	-	-	Allowance to be included
Maintenance Tools & Equipment	Y	-	-	Allowance to be included
Permanent Plant Equipment & Furnishings	Y	-	-	Allowance to be included
Sales Tax	Y	-	-	Sales tax is excluded, other than for non-permanent consumables and supplies
Escalation	Y	-	-	Allowance to be included
Owner's Contingency	Y	-	-	Allowance to be included
Interest During Construction	N	-	-	Excluded
Temporary Utilities	Y	-	-	Included in EPC costs
Startup Testing Fuels and Consumables	Y	-	-	Allowance to be included
Operator training	Y	-	-	Allowance to be included
Site Security	Y	-	-	Allowance to be included
GENERAL ASSUMPTIONS				
Reuse of Existing Equipment and Systems	Y	-	-	Existing equipment, piping, cables, etc. are in adequate working order and can be reused without modifications
EXCLUSIONS				
Taxes	-	-	-	Sales, use, gross receipts, property, and other types.
Insurance	-	-	-	All insurance other than General Liability being carried as a project cost
Sound abatement above normal supply	-	-	-	
Aesthetic landscaping other than erosion control	-	-	-	
High escalation assocated with extreme market conditions	-	-	-	
Financing fees	-	-	-	
Interest during construction	-	-	-	

East Kentucky Power Cooperative
Cooper 2x1 Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
GENERAL PROJECT INFORMATION				
Project Description	-	-	-	New 2x1 dual fuel combined cycle combustion turbine power plant consisting of two (2) advanced F-class combustion turbines (CTGs), two (2) heat recovery steam generators (HRSGs), a single condensing steam turbine generator (STG), and a cooling tower. The new CTGs, STG, HRSGs, and associated auxiliary equipment will be located indoors.
Project Location	-	-	-	Pulaski County, KY.
Site Description	-	-	-	Existing brownfield site at Cooper Power Station.
Design Fuel	-	-	-	New natural gas pipeline routed to site with fuel oil backup (ultra low sulfur diesel)
Heat Rejection	-	-	-	Wet counterflow, mechanical draft cooling tower
Operation	-	-	-	Baseloaded with outages for maintenance
Capacity Factor	-	-	-	90%
Contracting Approach	-	-	-	Multi-prime.
Labor	-	-	-	Union or Non-Union.
Project Liquidated Damages	-	-	-	Schedule and performance for each contract.
Project Bonding /LOC	-	-	-	100% Bonding.
Project COD Dates	-	-	-	2030
Project Expansion	-	-	-	None considered
MECHANICAL SYSTEMS/EQUIPMENT				
AQUEOUES AMMONIA SYSTEM				
Ammonia Flow Control Skid	Y	2	100%	One per HRSG.
Ammonia Forwarding Pump Skid	Y	3	100%	One per HRSG plus common spare
Ammonia Storage Tank	Y	1	100%	
Ammonia Unloading Skid	Y	1	100%	
SCR Ammonia Distribution Grid	Y	2	100%	One per HRSG.
SCR Catalyst	Y	2	100%	
Detection	N	-	-	
AUXILIARY STEAM				
Aux Steam Electric Superheater	Y	1	100%	
Aux Boiler	Y	1	100%	Natural gas-fired for plant startup
Aux Boiler Deaerator	Y	1	100%	
Aux Boiler Blowdown Tank	Y	1	100%	
Aux Boiler Forced Draft (FD) Fan	Y	1	100%	
Aux Boiler Feedwater Pumps	Y	2	100%	
Aux Boiler Sample Analysis Panel	Y	2	100%	
CIRCULATING WATER				
Cooling Tower	Y	1	100%	Mechanical draft counterflow FRP cooling tower on concrete basin
Circulating Water Pumps	Y	2	50%	
Aux Cooling Water Pump	Y	1	100%	
Cooling Tower Chem Feed Tanks	Y	2	100%	Chemicals as required based on source water quality
Cooling Tower Chem Feed Skids	Y	5	100%	Each skid will have 2x100% or 3x50% redundancy. Chemicals as required based on source water quality.
CLOSED COOLING WATER (CCW)				
CCW Heat Exchangers	Y	2	100%	
CCW Pumps	Y	2	100%	
CCW Head Tank	Y	1	100%	
Glycol type	Y	-	-	Propylene
CTG Cooler	Y	4	50%	2x50% per CTG
CTG Lube Oil Cooler	Y	4	50%	2x50% per CTG
BFP Heat Exchanger	Y	2	100%	
HRSG Recirc Pump Heat Exchanger	Y	2	100%	
COMPRESSED AIR				
Air Compressors	Y	3	50%	Air-Cooled, Oil-Free, Rotary Screw
Air Dryer/Filters	Y	2	100%	Twin-Tower, Heatless Desiccant with pre- and after-filters
Wet Air Receiver	Y	1	100%	
Dry Air Receiver	Y	1	100%	
CONDENSATE SYSTEM				
Condenser	Y	1	100%	Single shell, single pressure, dual pass, divided waterbox, self-deaerating, downward exhaust steam surface condenser with tube sheets, expansion joints, steam turbine bypass sparger tubes and hotwell sparger, baffles and distribution piping, and drains flash box. Supplied with vacuum pumps and recirc pumps.
Condensate Pumps	Y	3	50%	Vertical can-type
Gland Steam Condenser	Y	1	100%	
CYCLE CHEMICAL FEED				
Ammonia/Amine System	Y	2	100%	
Phosphate System	Y	6	50%	3x50% per HRSG
Oxygen Scavenger System	Y	2	100%	Includes 2x100% feed pumps
DEMINERALIZED WATER SYSTEM				
Demineralized Water Transfer Pumps	Y	2	100%	
Demineralized Water Storage Tank	Y	1	100%	Field erected tank. Sizing based on steam cycle makeup and NOx water injection (while firing on fuel oil)
Reverse Osmosis (RO) Prefilters	Y	2	100%	
Two-Pass RO Skids	Y	2	100%	Skids include booster pumps
Mixed Bed Demineralization System	Y	2	100%	
Clean in Place (CIP) System	Y	1	100%	Includes tank, heater, cartridge filter and forwarding pump
Chemical Dosing Skids	Y	9	100%	Each skid will have 2x100% or 3x50% redundancy. Chemicals as required based on source water quality.
Chemical Totes	Y	9	100%	
FEEDWATER SYSTEM				
Feedwater pumps	Y	4	100%	With interstage bleed and control valves. Designed for max flow during full load operation with both combustion turbines and full steam turbine bypass. 2x100% for each HRSG (100% capacity defined by max unfired demand with STG bypass)
FIRE PROTECTION				
Design Basis	Y	-	-	NFPA 850 recommended practice.
Insurer/special requirements	Y	-	-	FM Global
CTG Fire Protection	Y	-	-	CO2 and alarm

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		Y/N	Number	% Capacity (per Unit)	Notes
	Electrical Equipment Rooms / PCMs	Y	-	-	CO2 and alarm
	Pump supply source(s)	Y	2	100%	Electric motor and Diesel driven fire pump taking suction from the Service/Fire Water Storage Tank. Jockey pump to maintain header pressure and for small leaks.
	Storage	Y	1	100%	Combined Service/Fire Water Storage Tank fed from makeup water source
	Fire loop	Y	-	-	Standalone fire loop
	Sprinklers	Y	-	-	Provided for occupied buildings per NFPA 13 including admin/office areas, laboratories, restrooms and warehouse space. A Pre-action sprinkler system will be provided for STG bearing protection. A deluge spray system will be provided for STG lube oil storage tank and piping.
	Foam System	N	-	-	
	Smoke/heat detectors	Y	-	-	Where necessary or recommended by NFPA
	Fire walls	Y	-	-	2-hr fire walls where required by NFPA
FUEL OIL					
	Storage Tanks	Y	2	50%	Field Erected tank sized for 72 hours of GT operation at full load. Additional tank capacity of 8 hours of continuous operator of backup diesel generator. Located within secondary containment structure
	Transfer Pumps	Y	3	100%	1 x 100% for each combustion turbine unit with 1 x 100% common spare located near fuel oil tank.
	Unloading Pumps	Y	3	100%	Two (2) truck unloading stations. 1 x 100% unloading pump for each unloading station with 1 x 100% common spare.
	Heating	Y	3	50%	3 x 50% inline electric heaters with recirculation system. Each heater sized for 50% of total plant fuel oil flow (all three units).
	Duplex Filter	Y	2	100%	One skid for each CTG (provided by CTG supplier)
	Meter	Y	2	100%	One for each CTG (provided by CTG supplier)
HVAC SYSTEMS					
	Building electric heaters, exhaust fans and intake louvers, air-conditioning	Y	TBD	100%	As required for occupied buildings and electrical rooms
MAKE-UP WATER					
	Supply Source	-	-	-	Existing onsite clarified water fed from Cumberland River. Tie point will be downstream of existing clarifier
	Clarified Water Transfer Pumps	Y	2	100%	
	Clarified Water Storage Tank	Y	1	100%	
	Clarified Water Ultra Filtration (UF) Filters	Y	2	100%	
	UF Backwash Tank	Y	1	100%	
	UF Backwash Pumps	Y	2	100%	
	Chemical Feed Pumps	Y	8	100%	Chemicals as required based on source water quality
	Chemical Totes	Y	4	100%	
	Service/Fire Water Storage	Y	1	100%	Field erected tank, includes immersion heater(s) and insulation. Standpipe for dedicated fire water volume.
	Service Water Transfer Pumps	Y	2	100%	
NATURAL GAS					
	Off-site Pipeline	Y	-	-	New natural gas pipeline routed to site
	Compression	N	-	-	
	Metering & Regulation	Y	2	100%	
	Dew Point Heating	Y	2	100%	1 x 100% per CTG. Natural gas fired dew point heaters
	Combustion Gas Turbine (CTG)	Y	2	50%	Dual fuel rated (natural gas and ULSD) F-class gas turbine generators provided with inlet silencers, air filtration systems, low Nox combustors, lube oil systems, hydraulic oil systems, starting systems, acoutical enclosures with HVAC, controls, fire protection and fuel systems
	Fuel Gas Filter Separator	Y	2	100%	
	Fuel Gas Metering Skid	Y	2	100%	
	Fuel Gas Pilot Fuel Filter Separator Skid	Y	2	100%	
	Fuel Gas Heater Skid	Y	2	100%	
	Fuel Gas Knockout Drum	Y	2	100%	
	Fuel Gas Filter Separator Skid	Y	1	100%	Supply gas filter separator and drains tank
	Fuel Gas Drains Tank	Y	2	100%	1x100% per CTG
NITROGEN					
	Nitrogen Bottles, Distribution Manifold	Y	1	100%	
POTABLE WATER					
	Supply Source	Y	-	-	City tap, assumes sufficient pressure and flow
	Emergency Eye Wash/Safety Showers	Y	14	100%	
	Potable Water Water Heater Tanks	Y	7	100%	
SAMPLE ANALYSIS					
	Sample Analysis Panel	Y	1	100%	Sample cycle make-up, reclaim water supply, condensate pump discharge and after chemical feed, HRSG water and steam, BFP suction and discharge, and wastewater discharge
	Sample Analysis Cooler	Y	1	100%	
SANITARY SEWER					
	Sanitary Lift Station	Y	1	100%	Lift station includes 2x100% sewage pumps
	Sanitary Sewer Pumps	Y	2	100%	
	Sanitary Treatment Facility	N	-	-	Reuse existing facility sanitary treatment
STEAM					
	Steam Turbine Generator (STG)	Y	1	100%	Multi-stage, reheat, straight-condensing steam turbine including HP, reheat, and LP steam from HRSG's. Provided with stop and control valves, non-return valves, hydraulic control oil systems, lube oil systems, exhaust hood spray system, gland steam system including condenser with exhausters, turning gear, water induction prevention, and turbine control system with DCS interface
	STG Atmospheric Drains Tank	Y	1	100%	
	Heat Recovery Steam Generator (HRSG)	Y	2	50%	Triple pressure level, reheat, natural circulation type with horizontal gas turbine exhaust flow through vertical tube heat transfer sections. Includes SCR and CO/VOC catalysts. Self-supported stacks with ports for emision monitoring, platforms and ladder access. Water chemistry controlled via continuous blowdown and chemical addition as required.
	Turbine Gland Steam Condenser Module	Y	1	100%	
WASTEWATER					

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		Y/N	Number	% Capacity (per Unit)	Notes
	Contaminated Wastewater	Y	-	-	Drains for areas around equipment that could be contaminated with oil will be directed through an oil/water separator.
	Oil/water Separator (OWS)	Y	1	100%	OWS includes 2x100% pumps. Effluent discharged to existing outfall
	Plant Drains Sump Pumps	Y	7	100%	Sumps and sump pumps as required
	Washwater/False Start Drains Tank	Y	2	100%	1x100% per CTG
	Blowdown/Recycle Tank	Y	1	100%	Recover steam drum blowdown and recycle into influent water treatment system
	Recycle Pumps	Y	2	100%	
CATHODIC PROTECTION					
	Underground Steel Piping	Y	-	-	Cathodic protection system will be galvanic anode type, if required.
	Underground Steel Tanks	Y	-	-	Coated with sacrificial anodes, if required.
DEMOLITION		Y	-	-	Existing coal yard equipment and foundations will be demolished as required to make room for new CCGT facility
CONTROLS					
Equipment Control					
	CTG	Y	-	-	Control system provided by equipment OEM with local HMI for each CTG
	STG	Y	-	-	Control system provided by equipment OEM with local HMI
	Medium Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Motor Control Centers	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Low Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Plant Control System	Y	-	-	Provided system will link all CTG and STG controllers and HMI application servers. Provided with redundant ethernet to application servers.
	Plant Historian	Y	-	-	
	Offsite Interfaces	Y	-	-	Dispatching, OEM Monitoring, EKPC Monitoring
Automatic Generation Control		Y			
	Distributed Control System (DCS)	Y	1	100%	Balance of Plant controls same as CTG and STG control for Siemens. Separate DCS would be needed for GE turbines.
Vibration monitoring					
	CTG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	STG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	BOP Critical and High Speed Motors	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
Plant Simulator		Y	-	-	EKPC to confirm.
Digital Bus					
	Foundation Fieldbus	N	-	-	
	Remote I/O	Y	-	-	
Instrumentation					
	Transmitters	Y	-	-	
	HART	Y	-	-	Install tri-loops on valves for feedback.
	Performance Testing	Y	-	-	
	Meteorological Station	N	-	-	
Continuous Emissions Monitoring System		Y	2	100%	1x100% per stack. Datalink to DCS
Relaying Data Link		Y	-	-	Redundant relay communications network for protection and control. See Equipment Control section for equipment / relay interfaces to the control system.
Communication		Y	-	-	Datalinks for Battery Monitoring, Gas Yard, Gas Compressors/Dewpoint Heaters, Air Compresors, CEMS
	Dispatching	Y	-	-	Automatic Generation Control through RTU communication
	Off site monitoring/administrations	Y	-	-	OEM for Turbine Controller Remote Connection
	Switchyard	Y	-	-	Communication Interface with Switchyard RTU
	Internal plant	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
	External	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
NERC CIP Requirements		Y	-	-	EKPC to confirm. E.g. CIP low, medium, etc.
HMI		Y	-	-	Stand Alone Controllers with local HMI's. Plant Control HMI located in New Control Room, Admin DCS Room and Switchgear building.
ELECTRICAL					
Generator Step-Up Transformers:					
	Gas Turbine	Y	2	100%	1x100% for each CTG
	Steam Turbine	Y	1	100%	
Auxiliary/Reserve Transformers:					
	Gas Turbine	Y	2	100%	1x100% for each CTG
Generator Buses:					
	Gas Turbine	Y	2	100%	Isolated Phase Bus: 1x100% for each CTG
	Steam Turbine	Y	1	100%	Isolated Phase Bus: 1x100% for STG
Generator Circuit Breakers:					
	Gas Turbine	Y	2	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
	Steam Turbine	Y	1	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
Blackstart Generator(s) and Capability		N	-	-	
Electrical Equipment Enclosures:		Y	-	-	Base scope will house electrical equipment inside power building, ACC building, or water treament building. Separate PCM for cooling tower
Switchgear:					
	4160V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
	480V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
Motor Control Centers:					
	480 V MCCs	Y	-	-	Rated for the operating load
Emergency Power:					
	Uninterruptible Power (UPS)	Y	-	-	A single Balance of Plant UPS system will be provided for the STG and BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
	DC System	Y	-	-	A single Balance of Plant DC system will be provided for the STG and BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
Standby Diesel Generator		Y	-	-	Standby diesel generator rated for OEM and BOP Essential operating loads as well as heat trace to maintaining a safe shutdown condition.
Stand Alone Control Systems					

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		Y/N	Number	% Capacity (per Unit)	Notes
	Fire Protection/Detection	Y	-	-	See fire protection section in Mechanical for details
	Plant HVAC	Y	-	-	See HVAC section in Mechanical for details
	Building/Site Security	Y	-	-	
	Plant Communications	Y	-	-	
On-Line Battery Monitoring:		Y	-	-	
Lighting					
	Normal	Y	-	-	LED-lighting; lighting required for new road and plant buildings.
	Emergency Egress	Y	-	-	Local battery pack fixtures will be provided for emergency egress.
Grounding		Y	-	-	Brownfield site. New grounding grid with ties to the existing plant grid as applicable.
Lightning Protection		Y	-	-	A UL Master Label will be provided for the new facility.
Freeze Protection		Y	-	-	Heat tracing designed to maintain 40F for fluids subject to freezing based on size and service
Electrical Studies:					
	Load Flow, voltage drop, short circuit	Y	-	-	Identify equipment and bus loading, motor terminal voltages and available fault currents at each voltage level
	Protective coordination/relay settings	Y	-	-	
	Arc Flash	Y	-	-	
Cabling		Y	-	-	Cable tray and field routed conduit above grade, duct bank below grade
Transmission / Interconnection:		N	-	-	Per EKPC
CIVIL/STRUCTURAL					
Existing Facilities		Y	-	-	Brownfield site. Tie into existing Cooper system (roads, storm drainage). Topographic survey of the plant areas will be required.
Layout Considerations		Y	-	-	Reuse part of existing infrastructure and road from previous coal plant construction
Disposal of Spoils		-	-	-	Excess spoils will be disposed of on-site, used for fill if possible. No hazardous materials accounted for in project estimate.
Soils Conditions / Stability		-	-	-	New combined cycle located in coal yard area. No geotechnical information provided for area. A geotechnical investigation will be needed to confirm stability requirements.
Soil Improvement		N	-	-	No soil improvement is assumed
Subsurface Rock		N	-	-	Assume no rock excavation required.
Subsurface water		N	-	-	No dewatering included.
Cut/Fill		-	-	-	Use existing site materials to grade the site and avoid off-site borrow.
Disposal of debris		-	-	-	Disposed of on-site. However, debris from the existing coal yard foundation demolition and existing equipment demolition would have to be transported to a permitted facility or the facility on-site would have to be pemitted for this use.
Permanent Stormwater		-	-	-	Existing. New surface water drainage ditches and piping to collect and direct to offsite outfall. Regrading as required to follow existing drainage paths.
Construction Stormwater		-	-	-	Erosion control will be in accordance with state and local guidelines and regulations and will include best management practices such as silt fence, rock check dams, slope protection, construction exits, and stormwater pond(s) for construction and permanent. A SWPPP will be prepared.
Roads		N	-	-	Existing plant roads to allow for deliveries via truck.
Surfacing		-	-	-	Main access roads shall be paved. Maintenance roads and areas will be covered with crushed rock. Other areas top soil and seeded.
Soil Bearing Capacity		-	-	-	Soil bearing capacity not available. To be determined by geotechnical investigation. Foundation types assumed as noted below based on an allowable bearing capacity of approximately 2,500 psf.
Foundation type		-	-	-	Assume CTG, STG, HRSG, Cooling Tower, and Generation Building will be pile-supported. All other equipment/structures will be supported on shallow foundations (mats or footings). A geotechnical investigation will be needed to confirm these assumptions.
Transformer Containment		-	-	-	Containment for oil-filled transformer will be provided with an open pit design.
Demolition (Foundation)		Y	-	-	See "Disposal of debris" and "Disposal of Spoils" sections above.
Enclosures					
	Generation Building	Y	1	100%	Building housing CTG, HRSG, STG, and Aux Boiler (including control room, warehouse space, administrative space with offices, and machine shop) Building cranes included for CTG and STG
	Water Treatment Building	Y	1	100%	Building housing water treament equipment and fire water pumps
	Cooling Tower Chemical Feed Enclosure	Y	1	100%	Building to house Cooling Tower chemical feed equipment
	Electrical (see electrical section)	Y	-	-	
	Warehouse/Admin Facilities	Y	1	100%	
	Maintenance Shops	Y	1	100%	
Maintenance cranes		Y	-	-	
Guardshack		N			Existing Cooper gaurdshack used.
Site Security		-	-	-	Included in Owner's costs
Landscaping		-	-	-	Minimal landscaping included. Disturbed areas will be seeded for erosion control.
Fence		N			Assume existing perimeter security fence is adequate for new plant
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Utilities					
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	Sanitary	Y	-	-	Portable facilities provided by construction contractors
Parking		Y	-	-	New permanent parking adjacent to Generation building and Water Treament building. Temporary construction parking to be identified.
Gate Entry					
	Main	-	-	-	Existing Cooper guard shack.
	Personnel/Craft	-	-	-	Existing Cooper main gate and guard shack.
	Delivery	-	-	-	New slide gate for construction.
Construction Field Office / Trailers					
	Owner	Y	-	-	Trailers in Owners Costs.
	Engineer	Y	-	-	Trailers in Owners Costs.
	Vendors	Y	-	-	Trailers in Owners Costs.
	Contractors	Y	-	-	Trailers in Owners Costs.
	Site Services	Y	-	-	Trailers in Owners Costs.

East Kentucky Power Cooperative
Cooper 2x1 Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
Laydown area	Y	-	-	On site areas to be identified
Warehouses	Y	-	-	Existing warehouse is full; Contractor will provide necessary storage space during construction.
OWNER COSTS / MISC.				
Permits				
See Permit Matrix	Y	-	-	EKPC w/ BMcD Support.
Owner's Costs				
Project Development	Y	-	-	Allowance to be included
Owner's Operations Personnel	Y	-	-	Allowance to be included
Owner's Project Management	Y	-	-	Allowance to be included
Owner's Engineer	N	-	-	
Owner's Legal Counsel	Y	-	-	Allowance to be included
Political Concessions / Area Development Fees	Y	-	-	Allowance to be included
Permitting & License Fees	Y	-	-	Allowance to be included
Land	N	-	-	Brownfield, existing
Water Rights Costs	Y	-	-	Allowance to be included
Water Infrastructure and Supply to Site	N	-	-	Existing
Natural Gas Infrastructure and Supply to Site	Y	-	-	Allowance to be included
Labor Camp	N	-	-	
Permanent Plant Operating Spare Parts	Y	-	-	Allowance to be included
Maintenance Tools & Equipment	Y	-	-	Allowance to be included
Permanent Plant Equipment & Furnishings	Y	-	-	Allowance to be included
Sales Tax	Y	-	-	Sales tax is excluded, other than for non-permanent consumables and supplies
Escalation	Y	-	-	Allowance to be included
Owner's Contingency	Y	-	-	Allowance to be included
Interest During Construction	N	-	-	Excluded
Temporary Utilities	Y	-	-	Included in EPC costs
Startup Testing Fuels and Consumables	Y	-	-	Allowance to be included
Operator training	Y	-	-	Allowance to be included
Site Security	Y	-	-	Allowance to be included
GENERAL ASSUMPTIONS				
Reuse of Existing Equipment and Systems	Y	-	-	Existing equipment, piping, cables, etc. are in adequate working order and can be reused without modifications
EXCLUSIONS				
Taxes	-	-	-	Sales, use, gross receipts, property, and other types.
Insurance	-	-	-	All insurance other than General Liability being carried as a project cost
Sound abatement above normal supply	-	-	-	
Aesthetic landscaping other than erosion control	-	-	-	
High escalation assocated with extreme market conditions	-	-	-	
Financing fees	-	-	-	
Interest during construction	-	-	-	

East Kentucky Power Cooperative
Tygarts Creek Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
GENERAL PROJECT INFORMATION				
Project Description	-	-	-	New 3x1 dual fuel combined cycle combustion turbine power plant consisting of three (3) advanced F-class combustion turbines (CTGs), three (3) heat recovery steam generators (HRSGs), a single condensing steam turbine generator (STG), and an air-cooled condenser (ACC). The new CTGs, STG, HRSGs, and associated auxiliary equipment will be located indoors.
Project Location	-	-	-	Greenup County, KY.
Site Description	-	-	-	New greenfield site at Tygart Creek site #2.
Design Fuel	-	-	-	New tie to nearby natural gas pipeline at site with fuel oil backup (ultra low sulfur diesel)
Heat Rejection	-	-	-	New air-cooled condenser
Operation	-	-	-	Baseloaded with outages for maintenance
Capacity Factor	-	-	-	90%
Contracting Approach	-	-	-	Multi-prime.
Labor	-	-	-	Union or Non-Union.
Project Liquidated Damages	-	-	-	Schedule and performance for each contract.
Project Bonding /LOC	-	-	-	100% Bonding.
Project COD Dates	-	-	-	2030
Project Expansion	-	-	-	None
MECHANICAL SYSTEMS/EQUIPMENT				
AQUEOUES AMMONIA SYSTEM				
Ammonia Flow Control Skid	Y	3	100%	One per HRSG.
Ammonia Forwarding Pump Skid	Y	4	100%	One per HRSG plus common spare
Ammonia Storage Tank	Y	1	100%	
Ammonia Unloading Skid	Y	1	100%	
SCR Ammonia Distribution Grid	Y	3	100%	One per HRSG.
SCR Catalyst	Y	3	100%	
Detection	N	-	-	
AUXILIARY STEAM				
Aux Steam Electric Superheater	Y	1	100%	
Aux Boiler	Y	1	100%	Natural gas-fired for plant startup
Aux Boiler Deaerator	Y	1	100%	
Aux Boiler Blowdown Tank	Y	1	100%	
Aux Boiler Forced Draft (FD) Fan	Y	1	100%	
Aux Boiler Feedwater Pumps	Y	2	100%	
Aux Boiler Sample Analysis Panel	Y	2	100%	
CLOSED COOLING WATER (CCW)				
Air-Cooled Heat Exchanger (ACHE)	Y	1	100%	
CCW Pumps	Y	4	33%	
CCW Head Tank	Y	1	100%	
Glycol type	Y	-	-	Propylene
CTG Cooler	Y	6	50%	
CTG Lube Oil Cooler	Y	3	100%	
BFP Heat Exchanger	Y	2	100%	
HRSG Recirc Pump Heat Exchanger	Y	3	100%	
COMPRESSED AIR				
Air Compressors	Y	3	50%	Air-Cooled, Oil-Free, Rotary Screw
Air Dryer/Filters	Y	2	100%	Twin-Tower, Heatless Desiccant with pre- and after-filters
Wet Air Receiver	Y	1	100%	
Dry Air Receiver	Y	1	100%	
CONDENSATE SYSTEM				
Air-Cooled Condenser (ACC)	Y	1	100%	Single pressure, two-stage design, sized for full load operation at max ambient conditions as defined by Heat Balance, and will include provisions for HRSG warm-up and 100% steam bypass. Includes: Hot box connection with distribution ducts, motor-actuated sectionalizing valves and drains, fin tube bundles and tube cleaning system, 2-100% liquid ring vacuum pumps, condensate collection headers, steal support structure, two-speed fans, fan deck, platforms and stairs
ACC Condensate Storage Tank	Y	1	100%	
Condensate Pumps	Y	3	50%	Vertical can-type
Gland Steam Condenser	Y	1	100%	
Steam Turbine Flash Tank	Y	1	100%	
CYCLE CHEMICAL FEED				
Ammonia/Amine System	Y	3	100%	
Phosphate System	Y	9	50%	3x50% per HRSG
Oxygen Scavenger System	Y	3	100%	Includes 3x100% feed pumps
DEMINERALIZED WATER SYSTEM				
Demineralized Water Transfer Pumps	Y	3	100%	
Demineralized Water Storage Tank	Y	1	100%	Field erected tank. Sizing based on steam cycle makeup, evaporative cooler makeup, and NOx water injection (while firing on fuel oil)
Reverse Osmosis (RO) Prefilters	Y	2	100%	
Two-Pass RO Skids	Y	2	100%	Skids include booster pumps
Mixed Bed Deminerization System	Y	2	100%	
Clean in Place (CIP) System	Y	1	100%	Includes tank, heater, cartridge filter and forwarding pump
Chemical Dosing Skids	Y	9	100%	Each skid will have 2x100% or 3x50% redundancy. Chemicals as required based on source water quality.
Chemical Totes	Y	9	100%	
FEEDWATER SYSTEM				
Feedwater pumps	Y	6	100%	With interstage bleed and control valves. Designed for max flow during full load operation with both combustion turbines and full steam turbine bypass. 2x100% for each HRSG (100% capacity defined by max unfired demand with STG bypass)
FIRE PROTECTION				
Design Basis	Y	-	-	NFPA 850 recommended practice.
Insurer/special requirements	Y	-	-	FM Global
CTG Fire Protection	Y	-	-	CO2 and alarm
Electrical Equipment Rooms / PCMs	Y	-	-	CO2 and alarm

East Kentucky Power Cooperative
Tygarts Creek Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Pump supply source(s)	Y	2	100%	Electric motor and Diesel driven fire pump taking suction from the Service/Fire Water Storage Tank. Jockey pump to maintain header pressure and for small leaks.
	Storage	Y	1	100%	Combined Service/Fire Water Storage Tank fed from makeup water source
	Fire loop	Y	-	-	Standalone fire loop
	Sprinklers	Y	-	-	Provided for occupied buildings per NFPA 13 including admin/office areas, laboratories, restrooms and warehouse space. A Pre-action sprinkler system will be provided for STG bearing protection. A deluge spray system will be provided for STG lube oil storage tank and piping.
	Foam System	N	-	-	
	Smoke/heat detectors	Y	-	-	Where necessary or recommended by NFPA
	Fire walls	Y	-	-	2-hr fire walls where required by NFPA
FUEL OIL					
	Storage Tank	Y	2	50%	Field Erected tanks sized for 72 hours of GT operation at full load. Additional tank capacity of 8 hours of continuous operator of backup diesel generator. Located within seconary containment structure
	Transfer Pumps	Y	4	100%	1 x 100% for each combustion turbine unit with 1 x 100% common spare located near fuel oil tank.
	Unloading Pumps	Y	3	100%	Two (2) truck unloading stations. 1 x 100% unloading pump for each unloading station with 1 x 100% common spare.
	Heating	Y	4	33%	4 x 33% inline electric heaters with recirculation system. Each heater sized for one CTG.
	Duplex Filter	Y	3	100%	One skid for each CTG (provided by CTG supplier)
	Meter	Y	3	100%	One for each CTG (provided by CTG supplier)
HVAC SYSTEMS					
	Building electric heaters, exhaust fans and intake louvers, air-conditioning	Y	TBD	100%	As required for occupied buildings and electrical rooms
MAKE-UP WATER					
	Supply Source	-	-	-	New well water for supply
	Well Water Pumps	Y	2	100%	
	Well Water Strainer/Filter Skid	Y	1	100%	
	Raw Water Storage Tank	Y	1	100%	
	Raw Water Ultra Filtration (UF) Filters	Y	2	100%	
	UF Backwash Tank	Y	1	100%	
	UF Backwash Pumps	Y	2	100%	
	Chemical Feed Pumps	Y	8	100%	Chemicals as required based on source water quality
	Chemical Totes	Y	4	100%	
	Service/Fire Water Storage Tank	Y	1	100%	Field erected tank, includes immersion heater(s) and insulation. Standpipe for dedicated fire water volume.
	Service Water Transfer Pumps	Y	2	100%	
NATURAL GAS					
	Off-site Pipeline	N	-	-	Natural gas available at an interconnection at/near the site boundary.
	Compression	N	-	-	Assume sufficient pressure available
	Metering & Regulation	Y	2	100%	
	Dew Point Heating	Y	3	100%	1 x 100% per CTG. Natural gas fired dew point heaters
	Combustion Gas Turbine (CTG)	Y	3	33%	Dual fuel rated (natural gas and ULSD) F-class gas turbine generators provided with inlet silencers, air filtration systems, low Nox combustors, lube oil systems, hydraulic oil systems, starting systems, acoutical enclosures with HVAC, controls, fire protection and fuel systems
	Fuel Gas Filter Separator	Y	3	100%	
	Fuel Gas Metering Skid	Y	3	100%	
	Fuel Gas Pilot Fuel Filter Separator Skid	Y	3	100%	
	Fuel Gas Heater Skid	Y	3	100%	
	Fuel Gas Knockout Drum	Y	3	100%	
	Fuel Gas Filter Separator Skid	Y	1	100%	Supply gas filter separator and drains tank
	Fuel Gas Drains Tank	Y	3	100%	1x100% per CTG
NITROGEN					
	Nitrogen Bottles, Distribution Manifold	Y	1	100%	
POTABLE WATER					
	Supply Source	Y	-	-	City tap, assumes sufficient pressure and flow
	Emergency Eye Wash/Safety Showers	Y	TBD	100%	
	Potable Water Water Heater Tanks	Y	TBD	100%	
SAMPLE ANALYSIS					
	Sample Analysis Panel	Y	1	100%	Sample cycle make-up, reclaim water supply, condensate pump discharge and after chemical feed, HRSG water and steam, BFP suction and discharge, and wastewater discharge
	Sample Analysis Cooler	Y	1	100%	
SANITARY SEWER					
	Sanitary Lift Station	Y	2	100%	Lift station includes 2x100% sewage pumps
	Sanitary Sewer Pumps	Y	4	100%	
	Sanitary Treatment Facility	Y	1	100%	Biotreatment of sanitary waste prior to effluent to existing wastewater outfall
STEAM					
	Steam Turbine Generator (STG)	Y	1	100%	Multi-stage, reheat, straight-condensing steam turbine including HP, reheat, and LP steam from HRSG's. Provided with stop and control valves, non-return valves, hydraulic control oil systems, lube oil systems, exhaust hood spray system, gland steam system including condenser with exhausters, turning gear, water induction prevention, and turbine control system with DCS interface
	STG Atmospheric Drains Tank	Y	1	100%	
	Heat Recovery Steam Generator (HRSG)	Y	3	33%	Triple pressure level, reheat, natural circulation type with horizontal gas turbine exhaust flow through vertical tube heat transfer sections. Includes SCR and CO/VOC catalysts. Self-supported stacks with ports for emision monitoring, platforms and ladder access. Water chemistry controlled via continuous blowdown and chemical addition as required.
	Turbine Gland Steam Condenser Module	Y	1	100%	
WASTEWATER					

East Kentucky Power Cooperative
Tygarts Creek Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Contaminated Wastewater	Y	-	-	Drains for areas around equipment that could be contaminated with oil will be directed through an oil/water separator.
	Oil/water Separator (OWS)	Y	1	100%	OWS includes 2x100% pumps. Effluent discharged to existing outfall
	Plant Drains Sump Pumps	Y	8	100%	Sumps and sump pumps as required
	Washwater/False Start Drains Tank	Y	3	100%	1x100% per CTG
	Blowdown/Recycle Tank	Y	3	100%	Recover steam drum blowdown and recycle into influent water treatment system
	Recycle Pumps	Y	2	100%	
CATHODIC PROTECTION					
	Underground Steel Piping	Y	-	-	Cathodic protection system will be galvanic anode type, if required.
	Underground Steel Tanks	Y	-	-	Coated with sacrificial anodes, if required.
DEMOLITION		Y	-	-	Existing buried utilities for coal plant will be demolished as required for new design
CONTROLS					
Equipment Control					
	CTG	Y	-	-	Control system provided by equipment OEM with local HMI for each CTG
	STG	Y	-	-	Control system provided by equipment OEM with local HMI
	Medium Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Motor Control Centers	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Low Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Plant Control System	Y	-	-	Provided system will link all CTG and STG controllers and HMI application servers. Provided with redundant ethernet to application servers.
	Plant Historian	Y	-	-	
	Offsite Interfaces	Y	-	-	Dispatching, OEM Monitoring, EKPC Monitoring
Automatic Generation Control		Y			
	Distributed Control System (DCS)	Y	1	100%	Balance of Plant controls same as CTG and STG control for Siemens. Separate DCS would be needed for GE turbines.
Vibration monitoring					
	CTG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	STG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	BOP Critical and High Speed Motors	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
Plant Simulator		Y	-	-	EKPC to confirm.
Digital Bus					
	Foundation Fieldbus	N	-	-	
	Remote I/O	Y	-	-	
Instrumentation					
	Transmitters	Y	-	-	
	HART	Y	-	-	Install tri-loops on valves for feedback.
	Performance Testing	Y	-	-	
	Meteorological Station	N	-	-	
Continuous Emissions Monitoring System		Y	3	100%	1x100% per stack. Datalink to DCS
Relaying Data Link		Y	-	-	Redundant relay communications network for protection and control. See Equipment Control section for equipment / relay interfaces to the control system.
Communication		Y	-	-	Datalinks for Battery Monitoring, Gas Yard, Gas Compressors/Dewpoint Heaters, Air Compresors, CEMS
	Dispatching	Y	-	-	Automatic Generation Control through RTU communication
	Off site monitoring/administrations	Y	-	-	OEM for Turbine Controller Remote Connection
	Switchyard	Y	-	-	Communication Interface with Switchyard RTU
	Internal plant	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
	External	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
NERC CIP Requirements		Y	-	-	EKPC to confirm. E.g. CIP low, medium, etc.
HMI		Y	-	-	Stand Alone Controllers with local HMI's. Plant Control HMI located in New Control Room, Admin DCS Room and Switchgear building.
ELECTRICAL					
Generator Step-Up Transformers:					
	Gas Turbine	Y	3	100%	1x100% for each CTG
	Steam Turbine	Y	1	100%	
Auxiliary/Reserve Transformers:					
	Gas Turbine	Y	3	100%	1x100% for each CTG
Generator Buses:					
	Gas Turbine	Y	3	100%	Isolated Phase Bus: 1x100% for each CTG
	Steam Turbine	Y	1	100%	Isolated Phase Bus: 1x100% for STG
Generator Circuit Breakers:					
	Gas Turbine	Y	3	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
	Steam Turbine	Y	1	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
Blackstart Generator(s) and Capability		N	-	-	
Electrical Equipment Enclosures:		Y	-	-	Base scope will house electrical equipment inside power building, ACC building, or water treament building.
Switchgear:					
	4160V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
	480V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
Motor Control Centers:					
	480 V MCCs	Y	-	-	Rated for the operating load
Emergency Power:					
	Uninterruptible Power (UPS)	Y	-	-	A single Balance of Plant UPS system will be provided for the STG and BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
	DC System	Y	-	-	A single Balance of Plant DC system will be provided for the STG and BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
Standby Diesel Generator		Y	-	-	Standby diesel generator rated for OEM and BOP Essential operating loads as well as heat trace to maintaining a safe shutdown condition.
Stand Alone Control Systems					
	Fire Protection/Detection	Y	-	-	See fire protection section in Mechanical for details
	Plant HVAC	Y	-	-	See HVAC section in Mechanical for details

East Kentucky Power Cooperative
Tygarts Creek Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Building/Site Security	Y	-	-	
	Plant Communications	Y	-	-	
On-Line Battery Monitoring:		Y	-	-	
Lighting					
	Normal	Y	-	-	LED-lighting; lighting required for new road and plant buildings.
	Emergency Egress	Y	-	-	Local battery pack fixtures will be provided for emergency egress.
Grounding		Y	-	-	New grounding grid
Lightning Protection		Y	-	-	A UL Master Label will be provided for the new facility.
Freeze Protection		Y	-	-	Heat tracing designed to maintain 40F for fluids subject to freezing based on size and service
Electrical Studies:					
	Load Flow, voltage drop, short circuit	Y	-	-	Identify equipment and bus loading, motor terminal voltages and available fault currents at each voltage level
	Protective coordination/relay settings	Y	-	-	
	Arc Flash	Y	-	-	
Cabling		Y	-	-	Cable tray and field routed conduit above grade, duct bank below grade
Transmission / Interconnection:		N	-	-	Per EKPC
CIVIL/STRUCTURAL					
Existing Facilities		N	-	-	Greenfield site. Not applicable
Layout Considerations		Y	-	-	Tie-ins to new gas pipeline and transmission.
Disposal of Spoils		-	-	-	Excess spoils will be disposed of on-site, used for fill if possible. No hazardous materials accounted for in project estimate.
Soils Conditions / Stability		-	-	-	No geotechnical information known at this time. Geotech will need to be completed to confirm. No special considerations included at this time.
Soil Improvement		N	-	-	No soil improvement is assumed
Subsurface Rock		N	-	-	Assume no rock excavation required.
Subsurface water		N	-	-	No dewatering included.
Cut/Fill		-	-	-	Use existing site materials to grade the site and avoid off-site borrow.
Disposal of debris		-	-	-	Disposed of on-site.
Permanent Stormwater		-	-	-	New stormwater to be collected in ditches and routed to new permitted outfall
Construction Stormwater		-	-	-	Erosion control will be in accordance with state and local guidelines and regulations and will include best management practices such as silt fence, rock check dams, slope protection, construction exits, and stormwater pond(s) for construction and permanent. A SWPPP will be prepared.
Roads		Y	-	-	All new roads for site
Surfacing		-	-	-	Main access roads shall be paved. Maintenance roads and areas will be covered with crushed rock. Other areas top soil and seeded.
Soil Bearing Capacity		-	-	-	Soil bearing capacity not available. To be determined by geotechnical investigation. Foundation types assumed as noted below based on an allowable bearing capacity of approximately 2,500 psf.
Foundation type		-	-	-	Assume CTG, STG, HRSG, ACC, and Generation Building will be pile-supported. All other equipment/structures will be supported on shallow foundations (mats or footings). A geotechnical investigation will be needed to confirm these assumptions.
Transformer Containment		-	-	-	Containment for oil-filled transformer will be provided with an open pit design.
Enclosures					
	Generation Building	Y	1	100%	Building housing CTG, HRSG, STG, and Aux Boiler (including control room, warehouse space, administrative space with offices, and machine shop) Building cranes included for CTG and STG
	Water Treatment Building	Y	1	100%	Building housing water treament equipment and fire water pumps
	ACC Building	Y	1	100%	Building to house ACC equipment and electrical
	Electrical (see electrical section)	Y	-	-	
	Warehouse/Admin Facilities	Y	1	100%	
	Maintenance Shops	Y	1	100%	
Maintenance cranes		Y	-	-	
Guardshack		Y			New guard shack
Site Security		-	-	-	Included in Owner's costs
Landscaping		-	-	-	Minimal landscaping included. Disturbed areas will be seeded for erosion control.
Fence		Y			New fence around perimeter of new plant facilities
CONSTRUCTION					
Utilities					
	Power	Y	-	-	Construction power from aux. generators
	Communication	Y	-	-	Cellular
	Construction Water	Y	-	-	Tie into new well
	Potable Water	Y	-	-	Trucked until City potable tie-in connection is commissioned
	Sanitary	Y	-	-	Portable facilities provided by construction contractors
Parking		Y	-	-	New permanent parking adjacent to Generation building and Water Treament building. Temporary construction parking to be identified.
Gate Entry					
	Main	-	-	-	New guard shack
	Personnel/Craft	-	-	-	New main gate/consturction entrance
	Delivery	-	-	-	New slide gate for construction
Construction Field Office / Trailers					
	Owner	Y	-	-	Trailers in Owners Costs.
	Engineer	Y	-	-	Trailers in Owners Costs.
	Vendors	Y	-	-	Trailers in Owners Costs.
	Contractors	Y	-	-	Trailers in Owners Costs.
	Site Services	Y	-	-	Trailers in Owners Costs.
Laydown area		Y	-	-	On site areas to be identified
Warehouses		Y	-	-	Contractor will provide necessary storage space during construction.
OWNER COSTS / MISC.					
Permits					
	See Permit Matrix	Y	-	-	EKPC w/ BMcD Support.
Owner's Costs					
	Project Development	Y	-	-	Allowance to be included
	Owner's Operations Personnel	Y	-	-	Allowance to be included

East Kentucky Power Cooperative
Tygarts Creek Combined Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
Owner's Project Management	Y	-	-	Allowance to be included
Owner's Engineer	N	-	-	
Owner's Legal Counsel	Y	-	-	Allowance to be included
Political Concessions / Area Development Fees	Y	-	-	Allowance to be included
Permitting & License Fees	Y	-	-	Allowance to be included
Land	Y	-	-	Allowance to be included
Water Rights Costs	Y	-	-	Allowance to be included
Water Infrastructure and Supply to Site	Y	-	-	New well water for supply
Natural Gas Infrastructure and Supply to Site	N	-	-	Existing pipeline adjacent to site
Labor Camp	N	-	-	
Permanent Plant Operating Spare Parts	Y	-	-	Allowance to be included
Maintenance Tools & Equipment	Y	-	-	Allowance to be included
Permanent Plant Equipment & Furnishings	Y	-	-	Allowance to be included
Sales Tax	Y	-	-	Sales tax is excluded, other than for non-permanent consumables and supplies
Escalation	Y	-	-	Allowance to be included
Owner's Contingency	Y	-	-	Allowance to be included
Interest During Construction	N	-	-	Excluded
Temporary Utilities	Y	-	-	Included in EPC costs
Startup Testing Fuels and Consumables	Y	-	-	Allowance to be included
Operator training	Y	-	-	Allowance to be included
Site Security	Y	-	-	Allowance to be included
EXCLUSIONS				
Taxes	-	-	-	Sales, use, gross receipts, property, and other types.
Insurance	-	-	-	All insurance other than General Liability being carried as a project cost
Sound abatement above normal supply	-	-	-	
Aesthetic landscaping other than erosion control	-	-	-	
High escalation assocated with extreme market conditions	-	-	-	
Financing fees	-	-	-	
Interest during construction	-	-	-	

East Kentucky Power Cooperative
Smith Simple Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
GENERAL PROJECT INFORMATION				
Project Description	-	-	-	New five (5) advanced F-class, dual-fuel rated, simple cycle combustion turbines (CTGs). The new CTGs and associated auxiliary equipment will be located indoors.
Project Location	-	-	-	Clark County, KY.
Site Description	-	-	-	Existing brownfield site at J. K. Smith Station.
Design Fuel	-	-	-	Existing natural gas pipeline at site with fuel oil backup (ultra low sulfur diesel)
Heat Rejection	-	-	-	N/A
Operation	-	-	-	Peaking
Capacity Factor	-	-	-	<35%
Contracting Approach	-	-	-	Multi-prime.
Labor	-	-	-	Union or Non-Union.
Project Liquidated Damages	-	-	-	Schedule and performance for each contract.
Project Bonding /LOC	-	-	-	100% Bonding.
Project COD Dates	-	-	-	2030
Project Expansion	-	-	-	Future expansion into 2x1 combined cycle with two units located in existing coal plant area
MECHANICAL SYSTEMS/EQUIPMENT				
CLOSED COOLING WATER (CCW)				
Air-Cooled Heat Exchanger (ACHE)	Y	5	100%	1 x 100% per unit
CCW Pumps	Y	10	100%	2 x 100% per unit
CCW Expansion Tank	Y	5	100%	1 x 100% per unit
CTG Cooler	Y	20	25%	4 x 25% per unit
CTG Lube Oil Cooler	Y	10	50%	2 x 50% per unit
COMPRESSED AIR				
Air Compressors	Y	2	100%	Air-Cooled, Oil-Free, Rotary Screw
Air Dryer/Filters	Y	2	100%	Twin-Tower, Heatless Desiccant with pre- and after-filters
Wet Air Receiver	Y	1	100%	
Dry Air Receiver	Y	1	100%	
Pulse Air Receivers	Y	5	100%	1 x 100% per unit
COMPRESSED GASES				
Bulk CO2 Storage Skid	Y	1	100%	Bulk storage vessel with condensing unit, vaporizer, and regulation
DEMINERALIZED WATER SYSTEM				
Supply Source	-	-	-	Portable Demineralized Trailers
Demineralized Water Transfer Pumps	Y	6	100%	1 x 100% per unit with common spare
Demineralized Water Storage Tank	Y	1	100%	Field erected tank. Sizing based on evaporative cooler makeup and NOx water injection (while firing on fuel oil) for all five new units
FIRE PROTECTION				
Design Basis	Y	-	-	NFPA 850 recommended practice.
Insurer/special requirements	Y	-	-	FM Global
CTG Fire Protection	Y	-	-	CO2 and alarm
Electrical Equipment Rooms / PCMs	Y	-	-	CO2 and alarm
Pump supply source(s)	Y	2	100%	Electric motor and Diesel driven fire pump taking suction from the Service/Fire Water Storage Tank. Jockey pump to maintain header pressure and for small leaks.
Storage	Y	1	100%	Combined Service/Fire Water Storage Tank fed from makeup water source
Fire loop	Y	-	-	Extension of existing fire loop to encompass new units
Sprinklers	Y	-	-	Provided for occupied buildings per NFPA 13 including admin/office areas, laboratories, restrooms and warehouse space.
Foam System	N	-	-	
Smoke/heat detectors	Y	-	-	Where necessary or recommended by NFPA
Fire walls	Y	-	-	2-hr fire walls where required by NFPA
FUEL OIL				
Storage Tank	Y	2	50%	Field Erected tank sized for 72 hours of GT operation at full load. Located within secondary containment structure
Forwarding Pumps	Y	6	100%	1 x 100% for each combustion turbine unit with 1 x 100% common spare located near fuel oil tank.
Unloading Pumps	Y	3	100%	Two (2) truck unloading stations. 1 x 100% unloading pump for each unloading station with 1 x 100% common spare.
Transfer Pump	Y	1	100%	Transfer diesel fuel to diesel fire pump day tank
Heating	Y	3	50%	3 x 50% inline electric heaters with recirculation system. Each heater sized for 50% of total plant fuel oil flow (all five new units).
Duplex Filter	Y	5	100%	One skid for each CTG (provided by CTG supplier)
Meter	Y	5	100%	One for each CTG (provided by CTG supplier)
HVAC SYSTEMS				
Building electric heaters, exhaust fans and intake louvers, air-conditioning	Y	TBD	100%	As required for occupied buildings and electrical rooms
MAKE-UP WATER				
Supply Source	-	-	-	Existing onsite clarified water fed from Kentucky River. Tie point will be downstream of existing clarifier
Clarified Water Transfer Pumps	Y	2	100%	
Clarified Water Storage Tank	Y	1	100%	
Clarified Water Ultra Filtration (UF) Filters	Y	2	100%	
UF Backwash Tank	Y	1	100%	
UF Backwash Pumps	Y	2	100%	
Chemical Feed Pumps	Y	8	100%	Chemicals as required based on source water quality
Chemical Totes	Y	4	100%	
Service/Fire Water Storage	Y	1	100%	Field erected tank, includes immersion heater(s) and insulation. Standpipe for dedicated fire water volume.
Service Water Pumps	Y	2	100%	
NATURAL GAS				
Off-site Pipeline	N	-	-	Natural gas available at an interconnection at/near the site boundary.
Compression	N	-	-	Assume sufficient pressure available
Metering & Regulation	Y	2	100%	
Dew Point Heating	Y	5	100%	1 x 100% per CTG. Natural gas fired dew point heaters
Combustion Gas Turbine (CTG)	Y	5	100%	Dual fuel rated (natural gas and ULSD) F-class gas turbine generators provided with inlet silencers, air filtration systems, low Nox combustors, lube oil systems, hydraulic oil systems, starting systems, acoutical enclosures with HVAC, controls, fire protection and fuel systems

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
Fuel Gas Filter Separator	Y	5	100%	1 x 100% per CTG
Fuel Gas Metering Skid	Y	5	100%	1 x 100% per CTG
Fuel Gas Pilot Fuel Filter Separator Skid	Y	5	100%	1 x 100% per CTG
Fuel Gas Heater Skid	Y	5	100%	1 x 100% per CTG
Fuel Gas Knockout Drum	Y	5	100%	1 x 100% per CTG
Fuel Gas Filter Separator Skid	Y	2	50%	Supply gas filter separator and drains tank
Fuel Gas Drains Tank	Y	5	100%	1 x 100% per CTG
POTABLE WATER				
Supply Source	Y	-	-	City tap, assumes sufficient pressure and flow
Emergency Eye Wash/Safety Showers	Y	8	100%	
Potable Water Instantaneous Heaters	Y	7	100%	
Potable Water Water Heater Tank	Y	1	100%	
SANITARY SEWER				
Sanitary Lift Station	Y	2	100%	Each lift station includes 2x100% sewage pumps
Sanitary Sewer Pumps	Y	4	100%	
Sanitary Treatment Facility	Y	1	100%	Package treatment of sanitary waste prior to effluent to existing wastewater outfall
WASTEWATER				
Contaminated Wastewater	Y	-	-	Drains for areas around equipment that could be contaminated with oil will be directed through an oil/water separator.
Oil/water Separator (OWS)	Y	2	100%	Each OWS includes 2x100% pumps. Effluent discharged to existing outfall
Plant Drains Sump Pumps	Y	5	100%	Sumps and sump pumps as required
CTG Water Wash Skid	Y	1	100%	
Washwater/False Start Drains Tank	Y	5	100%	1 x 100% per CTG
CATHODIC PROTECTION				
Underground Steel Piping	Y	-	-	Cathodic protection system will be galvanic anode type, if required.
Underground Steel Tanks	Y	-	-	Coated with sacrificial anodes, if required.
DEMOLITION	Y	-	-	Existing buried utilities for coal plant will be demolished as required for new design
CONTROLS				
Equipment Control				
CTG	Y	-	-	Control system provided by equipment OEM with local HMI for each CTG
Medium Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
Motor Control Centers	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
Low Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
Plant Control System	Y	-	-	Provided system will link all CTG controllers and HMI application servers. Provided with redundant ethernet to application servers.
Plant Historian	Y	-	-	
Offsite Interfaces	Y	-	-	Dispatching, OEM Monitoring, EKPC Monitoring
Automatic Generation Control	Y			
Distributed Control System (DCS)	Y	1	100%	Balance of Plant controls same as CTG control for Siemens. Separate DCS would be needed for GE turbines.
Vibration monitoring				
CTG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
BOP Motors for Critical or High Speed Applications	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
Plant Simulator	Y	-	-	EKPC to confirm.
Digital Bus				
Foundation Fieldbus	N	-	-	
Remote I/O	Y	-	-	
Instrumentation				
Transmitters	Y	-	-	
HART	Y	-	-	Install tri-loops on valves for feedback.
Performance Testing	Y	-	-	
Meteorological Station	N	-	-	
Continuous Emissions Monitoring System	Y	5	100%	1x100% per stack. Datalink to DCS
Relaying Data Link	Y	-	-	Redundant relay communications network for protection and control. See Equipment Control section for equipment / relay interfaces to the control system.
Communication	Y	-	-	Datalinks for Battery Monitoring, Gas Yard, Gas Compressors/Dewpoint Heaters, Air Compresors, CEMS
Dispatching	Y	-	-	Automatic Generation Control through RTU communication
Off site monitoring/administrations	Y	-	-	OEM for Turbine Controller Remote Connection
Switchyard	Y	-	-	Communication Interface with Switchyard RTU
Internal plant	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
External	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
NERC CIP Requirements	Y	-	-	EKPC to confirm. E.g. CIP low, medium, etc.
HMI	Y	-	-	Stand Alone Controllers with local HMI's. Plant Control HMI located in New Control Room, Admin DCS Room and Switchgear building.
ELECTRICAL				
Generator Step-Up Transformers:				
Gas Turbine	Y	5	100%	1 x 100% for each CTG
Auxiliary/Reserve Transformers:				
Gas Turbine	Y	5	100%	Each auxiliary transformer sized to source the associated unit and provide backup to an adjacent unit
Generator Buses:				
Gas Turbine	Y	5	100%	Isolated Phase Bus: 1 x 100% for each CTG
Generator Circuit Breakers:				
Gas Turbine	Y	5	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
Blackstart Generator(s) and Capability	N	-	-	
Electrical Equipment Enclosures:	Y	-	-	Base scope will house electrical equipment inside power building or water treament building.
Switchgear:				
4160V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
480V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
Motor Control Centers:				

East Kentucky Power Cooperative
Smith Simple Cycle
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	480 V MCCs	Y	-	-	Rated for the operating load
Emergency Power:					
	Uninterruptible Power (UPS)	Y	-	-	A single Balance of Plant UPS system will be provided for the BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
	DC System	Y	-	-	A single Balance of Plant DC system will be provided for the BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
Standby Diesel Generator		Y	-	-	Standby diesel generator rated for OEM and BOP Essential operating loads as well as heat trace to maintaining a safe shutdown condition.
Stand Alone Control Systems					
	Fire Protection/Detection	Y	-	-	See fire protection section in Mechanical for details
	Plant HVAC	Y	-	-	See HVAC section in Mechanical for details
	Building/Site Security	Y	-	-	
	Plant Communications	Y	-	-	
On-Line Battery Monitoring:		Y	-	-	
Lighting					
	Normal	Y	-	-	LED-lighting; lighting required for new road and plant buildings.
	Emergency Egress	Y	-	-	Local battery pack fixtures will be provided for emergency egress.
Grounding		Y	-	-	Brownfield site. New grounding grid with ties to the existing plant grid as applicable.
Lightning Protection		Y	-	-	A UL Master Label will be provided for the new facility.
Freeze Protection		Y	-	-	Heat tracing designed to maintain 40F for fluids subject to freezing based on size and service
Electrical Studies:					
	Load Flow, voltage drop, short circuit	Y	-	-	Identify equipment and bus loading, motor terminal voltages and available fault currents at each voltage level
	Protective coordination/relay settings	Y	-	-	
	Arc Flash	Y	-	-	
Cabling		Y	-	-	Cable tray and field routed conduit above grade, duct bank below grade
Transmission / Interconnection:		N	-	-	Per EKPC
CIVIL/STRUCTURAL					
Existing Facilities		Y	-	-	Brownfield site. Tie into existing Smith system (roads, storm drainage). Topographic survey of the plant areas will be required.
Layout Considerations		Y	-	-	Reuse part of existing infrastructure and road from previous coal plant construction for two CTGs. Utilize open slots (8, 11, 12) for three remaining CTGs adjacent to existing simple cycle CTGs
Disposal of Spoils		-	-	-	Excess spoils will be disposed of on-site, used for fill if possible. No hazardous materials accounted for in project estimate.
Soils Conditions / Stability		-	-	-	Two of the new simple cycle CTGs will be in area of coal-fired unit. No geotechnical information provided for coal-fired unit area. Estimate assumptions generally based on geotechnical information for existing Units -12 combustion turbines.
Soil Improvement		N	-	-	No soil improvement is assumed
Subsurface Rock		N	-	-	Assume no rock excavation required.
Subsurface water		N	-	-	No dewatering included.
Cut/Fill		-	-	-	Use existing site materials to grade the site and avoid off-site borrow.
Disposal of debris		-	-	-	Disposed of on-site. However, debris from the existing foundation demolition and existing buried piping demolition would have to be transported to a permitted facility or the facility on-site would have to be pemitted for this use.
Permanent Stormwater		-	-	-	Existing. New surface water drainage ditches and piping to collect and direct to offsite outfall. Regrading as required to follow existing drainage paths.
Construction Stormwater		-	-	-	Erosion control will be in accordance with state and local guidelines and regulations and will include best management practices such as silt fence, rock check dams, slope protection, construction exits, and stormwater pond(s) for construction and permanent. A SWPPP will be prepared.
Roads		N	-	-	Existing plant roads to allow for deliveries via truck.
Surfacing		-	-	-	Main access roads shall be paved with asphaltic concrete. Maintenance roads and areas will be covered with crushed rock. Other areas top soil and seeded.
Soil Bearing Capacity		-	-	-	Soil bearing capacity not available. To be determined by geotechnical investigation. Foundation types assumed as noted below based on an allowable bearing capacity of approximately 2,500 psf.
Foundation type		-	-	-	Assume CTG's will be pile-supported. All other equipment/structures will be supported on shallow foundations (mats or footings). A geotechnical investigation will be needed to confirm these assumptions.
Transformer Containment		-	-	-	Containment for oil-filled transformer will be provided with an open pit design.
Enclosures					
	CTG Enclosures	Y	5	100%	Enclosure housing each CTG
	Water Treatment Building	Y	1	100%	Building housing water treament equipment and fire water pumps
	Electrical (see electrical section)	Y	-	-	
	Warehouse/Admin Facilities	Y	1	100%	
Maintenance cranes		N	-	-	
Guardshack		N			Existing Smith gaurdshack used.
Site Security		-	-	-	Included in Owner's costs
Landscaping		-	-	-	Minimal landscaping included. Disturbed areas will be seeded for erosion control.
Fence		N			Assume existing perimeter security fence is adequate for new plant
CONSTRUCTION					
Utilities					
	Power	Y	-	-	Construction power from existing J.K Smith facility
	Communication	Y	-	-	Tie-in to existing system
	Construction Water	Y	-	-	Tie-in to existing J.K. Smith facility service water system
	Potable Water	Y	-	-	Tie-in to existing J.K. Smith facility potable water system
	Sanitary	Y	-	-	Portable facilities provided by construction contractors
Parking		Y	-	-	New permanent parking adjacent to Admin/Warehouse building and Water Treament building. Temporary construction parking to be identified.
Gate Entry					
	Main	-	-	-	Existing Smith guard shack.
	Personnel/Craft	-	-	-	Existing Smith main gate and guard shack.

East Kentucky Power Cooperative
Smith Simple Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
Delivery	-	-	-	New slide gate for construction.
Construction Field Office / Trailers				
Owner	Y	-	-	Trailers in Owners Costs.
Engineer	Y	-	-	Trailers in Owners Costs.
Vendors	Y	-	-	Trailers in Owners Costs.
Contractors	Y	-	-	Trailers in Owners Costs.
Site Services	Y	-	-	Trailers in Owners Costs.
Laydown area	Y	-	-	On site areas to be identified
Warehouses	Y	-	-	Existing warehouse is full; Contractor will provide necessary storage space during construction.
OWNER COSTS / MISC.				
Permits				
See Permit Matrix	Y	-	-	EKPC w/ BMcD Support.
Owner's Costs				
Project Development	Y	-	-	Allowance to be included
Owner's Operations Personnel	Y	-	-	Allowance to be included
Owner's Project Management	Y	-	-	Allowance to be included
Owner's Engineer	N	-	-	
Owner's Legal Counsel	Y	-	-	Allowance to be included
Political Concessions / Area Development Fees	Y	-	-	Allowance to be included
Permitting & License Fees	Y	-	-	Allowance to be included
Land	N	-	-	Brownfield, existing
Water Rights Costs	Y	-	-	Allowance to be included
Water Infrastructure and Supply to Site	N	-	-	Existing
Natural Gas Infrastructure and Supply to Site	N	-	-	N/A, reuse existing
Labor Camp	N	-	-	
Permanent Plant Operating Spare Parts	Y	-	-	Allowance to be included
Maintenance Tools & Equipment	Y	-	-	Allowance to be included
Permanent Plant Equipment & Furnishings	Y	-	-	Allowance to be included
Sales Tax	Y	-	-	Sales tax is excluded, other than for non-permanent consumables and supplies
Escalation	Y	-	-	Allowance to be included
Owner's Contingency	Y	-	-	Allowance to be included
Interest During Construction	N	-	-	Excluded
Temporary Utilities	Y	-	-	Included in EPC costs
Startup Testing Fuels and Consumables	Y	-	-	Allowance to be included
Operator training	Y	-	-	Allowance to be included
Site Security	Y	-	-	Allowance to be included
GENERAL ASSUMPTIONS				
Reuse of Existing Equipment and Systems	Y	-	-	Existing equipment, piping, cables, etc. are in adequate working order and can be reused without modifications
EXCLUSIONS				
Taxes	-	-	-	Sales, use, gross receipts, property, and other types.
Insurance	-	-	-	All insurance other than General Liability being carried as a project cost
Sound abatement above normal supply	-	-	-	
Aesthetic landscaping other than erosion control	-	-	-	
High escalation assocated with extreme market conditions	-	-	-	
Financing fees	-	-	-	
Interest during construction	-	-	-	

East Kentucky Power Cooperative
Tygarts Creek Simple Cycle
Scope Assumptions Matrix

BURNS McDONNELL

	Y/N	Number	% Capacity (per Unit)	Notes
GENERAL PROJECT INFORMATION				
Project Description	-	-	-	New three (3) advanced F-class, dual-fuel rated, simple cycle combustion turbines (CTGs). The new CTGs and associated auxiliary equipment will be located indoors.
Project Location	-	-	-	Greenup County, KY.
Site Description	-	-	-	New greenfield site at Tygart Creek site #2.
Design Fuel	-	-	-	New tie to nearby natural gas pipeline at site with fuel oil backup (ultra low sulfur diesel)
Heat Rejection	-	-	-	N/A
Operation	-	-	-	Peaking
Capacity Factor	-	-	-	<35%
Contracting Approach	-	-	-	Multi-prime.
Labor	-	-	-	Union or Non-Union.
Project Liquidated Damages	-	-	-	Schedule and performance for each contract.
Project Bonding /LOC	-	-	-	100% Bonding.
Project COD Dates	-	-	-	2030
Project Expansion	-	-	-	Leave room for future expansion/additional simple cycle units
MECHANICAL SYSTEMS/EQUIPMENT				
CLOSED COOLING WATER (CCW)				
Air-Cooled Heat Exchanger (ACHE)	Y	3	100%	1 x 100% per unit
CCW Pumps	Y	6	100%	2 x 100% per unit
CCW Expansion Tank	Y	3	100%	1 x 100% per unit
CTG Cooler	Y	12	25%	4 x 25% per unit
CTG Lube Oil Cooler	Y	6	50%	2 x 50% per unit
COMPRESSED AIR				
Air Compressors	Y	2	100%	Air-Cooled, Oil-Free, Rotary Screw
Air Dryer/Filters	Y	2	100%	Twin-Tower, Heatless Desiccant with pre- and after-filters
Wet Air Receiver	Y	1	100%	
Dry Air Receiver	Y	1	100%	
Pulse Air Receivers	Y	3	100%	1 x 100% per unit
COMPRESSED GASES				
Bulk CO2 Storage Skid	Y	1	100%	Bulk storage vessel with condensing unit, vaporizer, and regulation
DEMINERALIZED WATER SYSTEM				
Supply Source	-	-	-	Portable Demineralized Trailers
Demineralized Water Transfer Pumps	Y	4	100%	1 x 100% per unit with common spare
Demineralized Water Storage Tank	Y	1	100%	Field erected tank. Sizing based on evaporative cooler makeup and NOx water injection (while firing on fuel oil) for all three new units
FIRE PROTECTION				
Design Basis	Y	-	-	NFPA 850 recommended practice.
Insurer/special requirements	Y	-	-	FM Global
CTG Fire Protection	Y	-	-	CO2 and alarm
Electrical Equipment Rooms / PCMs	Y	-	-	CO2 and alarm
Pump supply source(s)	Y	2	100%	Electric motor and Diesel driven fire pump taking suction from the Service/Fire Water Storage Tank. Jockey pump to maintain header pressure and for small leaks.
Storage	Y	1	100%	Combined Service/Fire Water Storage Tank fed from makeup water source
Fire loop	Y	-	-	New fire loop to encompass units
Sprinklers	Y	-	-	Provided for occupied buildings per NFPA 13 including admin/office areas, laboratories, restrooms and warehouse space.
Foam System	N	-	-	
Smoke/heat detectors	Y	-	-	Where necessary or recommended by NFPA
Fire walls	Y	-	-	2-hr fire walls where required by NFPA
FUEL OIL				
Storage Tank	Y	2	50%	Field Erected tank sized for 72 hours of GT operation at full load. Located within secondary containment structure
Forwarding Pumps	Y	4	100%	1 x 100% for each combustion turbine unit with 1 x 100% common spare located near fuel oil tank.
Unloading Pumps	Y	3	100%	Two (2) truck unloading stations. 1 x 100% unloading pump for each unloading station with 1 x 100% common spare.
Transfer Pump	Y	1	100%	Transfer diesel fuel to diesel fire pump day tank
Heating	Y	3	50%	3 x 50% inline electric heaters with recirculation system. Each heater sized for 50% of total plant fuel oil flow (all three new units).
Duplex Filter	Y	3	100%	One skid for each CTG (provided by CTG supplier)
Meter	Y	3	100%	One for each CTG (provided by CTG supplier)
HVAC SYSTEMS				
Building electric heaters, exhaust fans and intake louvers, air-conditioning	Y	TBD	100%	As required for occupied buildings and electrical rooms
MAKE-UP WATER				
Supply Source	-	-	-	New well water for supply
Well Water Pumps	Y	2	100%	
Well Water Strainer/Filter Skid	Y	1	100%	
Chemical Feed Pumps	Y	2	100%	Chemicals as required based on source water quality
Chemical Totes	Y	1	100%	
Service/Fire Water Storage	Y	1	100%	Field erected tank, includes immersion heater(s) and insulation. Standpipe for dedicated fire water volume.
Service Water Pumps	Y	2	100%	
NATURAL GAS				
Off-site Pipeline	N	-	-	Natural gas available at an interconnection at/near the site boundary.
Compression	N	-	-	Assume sufficient pressure available
Metering & Regulation	Y	2	100%	
Dew Point Heating	Y	3	100%	1 x 100% per CTG. Natural gas fired dew point heaters
Combustion Gas Turbine (CTG)	Y	3	100%	Dual fuel rated (natural gas and ULSD) F-class gas turbine generators provided with inlet silencers, air filtration systems, low Nox combustors, lube oil systems, hydraulic oil systems, starting systems, acoutical enclosures with HVAC, controls, fire protection and fuel systems
Fuel Gas Filter Separator	Y	3	100%	1 x 100% per CTG
Fuel Gas Metering Skid	Y	3	100%	1 x 100% per CTG
Fuel Gas Pilot Fuel Filter Separator Skid	Y	3	100%	1 x 100% per CTG
Fuel Gas Heater Skid	Y	3	100%	1 x 100% per CTG

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	Fuel Gas Knockout Drum	Y	3	100%	1 x 100% per CTG
	Fuel Gas Filter Separator Skid	Y	2	50%	Supply gas filter separator and drains tank
	Fuel Gas Drains Tank	Y	3	100%	1 x 100% per CTG
POTABLE WATER					
	Supply Source	Y	-	-	City tap, assumes sufficient pressure and flow
	Emergency Eye Wash/Safety Showers	Y	4	100%	
	Potable Water Instantaneous Heaters	Y	3	100%	
	Potable Water Water Heater Tank	Y	1	100%	
SANITARY SEWER					
	Sanitary Lift Station	Y	2	100%	Each lift station includes 2x100% sewage pumps
	Sanitary Sewer Pumps	Y	4	100%	
	Sanitary Treatment Facility	Y	1	100%	Biotreatment of sanitary waste prior to effluent to new wastewater outfall
WASTEWATER					
	Contaminated Wastewater	Y	-	-	Drains for areas around equipment that could be contaminated with oil will be directed through an oil/water separator.
	Oil/water Separator (OWS)	Y	1	100%	Each OWS includes 2x100% pumps. Effluent discharged to new outfall
	Plant Drains Sump Pumps	Y	5	100%	Sumps and sump pumps as required
	CTG Water Wash Skid	Y	1	100%	
	Washwater/False Start Drains Tank	Y	3	100%	1 x 100% per CTG
CATHODIC PROTECTION					
	Underground Steel Piping	Y	-	-	Cathodic protection system will be galvanic anode type, if required.
	Underground Steel Tanks	Y	-	-	Coated with sacrificial anodes, if required.
DEMOLITION		N	-	-	
CONTROLS					
Equipment Control					
	CTG	Y	-	-	Control system provided by equipment OEM with local HMI for each CTG
	Medium Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Motor Control Centers	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Low Voltage Switchgear	Y	-	-	Hardwire Start / Stop / Breaker Status. Soft communications for other I/O.
	Plant Control System	Y	-	-	Provided system will link all CTG controllers and HMI application servers. Provided with redundant ethernet to application servers.
	Plant Historian	Y	-	-	
	Offsite Interfaces	Y	-	-	Dispatching, OEM Monitoring, EKPC Monitoring
Automatic Generation Control		Y			
	Distributed Control System (DCS)	Y	1	100%	Balance of Plant controls same as CTG control for Siemens. Separate DCS would be needed for GE turbines.
Vibration monitoring					
	CTG	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
	BOP Motors for Critical or High Speed Applications	Y	-	-	Probes wired to Bently Nevada; Hardwire Points between Bently Nevada and Unit Controllers
Plant Simulator		Y	-	-	EKPC to confirm.
Digital Bus					
	Foundation Fieldbus	N	-	-	
	Remote I/O	Y	-	-	
Instrumentation					
	Transmitters	Y	-	-	
	HART	Y	-	-	Install tri-loops on valves for feedback.
	Performance Testing	Y	-	-	
	Meteorological Station	N	-	-	
Continuous Emissions Monitoring System		Y	3	100%	1x100% per stack. Datalink to DCS
Relaying Data Link		Y	-	-	Redundant relay communications network for protection and control. See Equipment Control section for equipment / relay interfaces to the control system.
Communication		Y	-	-	Datalinks for Battery Monitoring, Gas Yard, Gas Compressors/Dewpoint Heaters, Air Compresors, CEMS
	Dispatching	Y	-	-	Automatic Generation Control through RTU communication
	Off site monitoring/administrations	Y	-	-	OEM for Turbine Controller Remote Connection
	Switchyard	Y	-	-	Communication Interface with Switchyard RTU
	Internal plant	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
	External	Y	-	-	Need further discussions with EKPC IT to determine how this is handled.
NERC CIP Requirements		Y	-	-	EKPC to confirm. E.g. CIP low, medium, etc.
HMI		Y	-	-	Stand Alone Controllers with local HMI's. Plant Control HMI located in New Control Room, Admin DCS Room and Switchgear building.
ELECTRICAL					
Generator Step-Up Transformers:					
	Gas Turbine	Y	3	100%	1 x 100% for each CTG
Auxiliary/Reserve Transformers:					
	Gas Turbine	Y	3	100%	Each auxiliary transformer sized to source the associated unit and provide backup to an adjacent unit
Generator Buses:					
	Gas Turbine	Y	3	100%	Isolated Phase Bus: 1 x 100% for each CTG
Generator Circuit Breakers:					
	Gas Turbine	Y	3	100%	Generator Circuit Breaker in Isolated Phase Bus for Synchronization
Blackstart Generator(s) and Capability		N	-	-	
Electrical Equipment Enclosures:		Y	-	-	Medium voltage electrical building
Switchgear:					
	4160V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
	480V Switchgear	Y	-	-	Configured in a Main-Tie-Main with source transformers and buses rated to power the entire lineup during the loss of a single source
Motor Control Centers:					
	480 V MCCs	Y	-	-	Rated for the operating load
Emergency Power:					
	Uninterruptible Power (UPS)	Y	-	-	A single Balance of Plant UPS system will be provided for the BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.

East Kentucky Power Cooperative
Tygarts Creek Simple Cycle
Scope Assumptions Matrix

BURNS McDONNELL

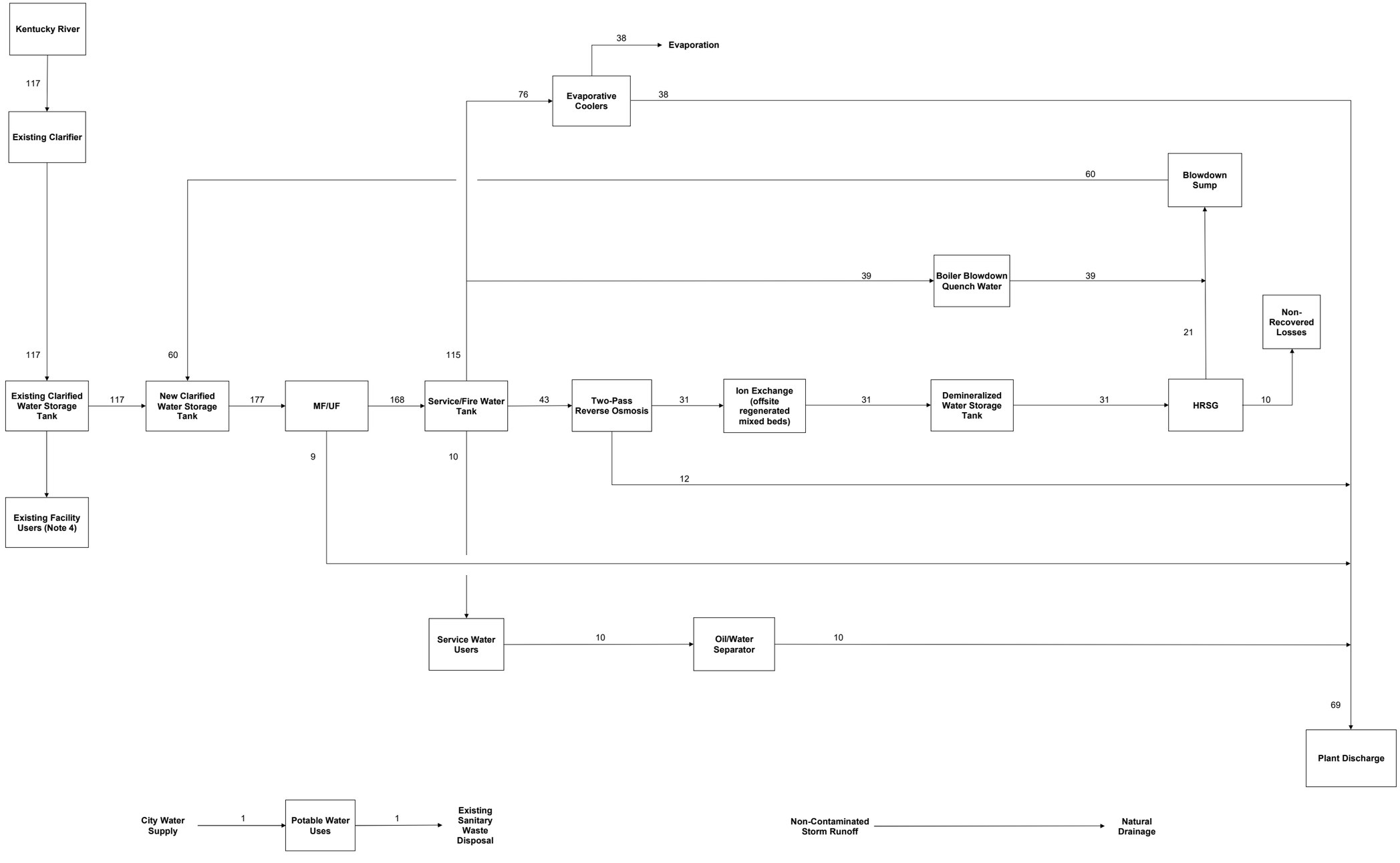
		Y/N	Number	% Capacity (per Unit)	Notes
	DC System	Y	-	-	A single Balance of Plant DC system will be provided for the BOP loads. The CTG OEM will provide the essential system for their equipment and safe shutdown.
Standby Diesel Generator		Y	-	-	Standby diesel generator rated for OEM and BOP Essential operating loads as well as heat trace to maintaining a safe shutdown condition.
Stand Alone Control Systems					
	Fire Protection/Detection	Y	-	-	See fire protection section in Mechanical for details
	Plant HVAC	Y	-	-	See HVAC section in Mechanical for details
	Building/Site Security	Y	-	-	
	Plant Communications	Y	-	-	
On-Line Battery Monitoring:		Y	-	-	
Lighting					
	Normal	Y	-	-	LED-lighting; lighting required for new road and plant buildings.
	Emergency Egress	Y	-	-	Local battery pack fixtures will be provided for emergency egress.
Grounding		Y	-	-	New grounding grid
Lightning Protection		Y	-	-	A UL Master Label will be provided for the new facility.
Freeze Protection		Y	-	-	Heat tracing designed to maintain 40F for fluids subject to freezing based on size and service
Electrical Studies:					
	Load Flow, voltage drop, short circuit	Y	-	-	Identify equipment and bus loading, motor terminal voltages and available fault currents at each voltage level
	Protective coordination/relay settings	Y	-	-	
	Arc Flash	Y	-	-	
Cabling		Y	-	-	Cable tray and field routed conduit above grade, duct bank below grade
Transmission / Interconnection:		N	-	-	Per EKPC
CIVIL/STRUCTURAL					
Existing Facilities		N	-	-	Greenfield site. Not applicable
Layout Considerations		Y	-	-	Sufficient room for future expansion considered. Tie-ins to new gas pipeline and transmission.
Disposal of Spoils		-	-	-	Excess spoils will be disposed of on-site, used for fill if possible. No hazardous materials accounted for in project estimate.
Soils Conditions / Stability		-	-	-	No geotechnical information known at this time. Geotech will need to be completed to confirm. No special considerations included at this time.
Soil Improvement		N	-	-	No soil improvement is assumed
Subsurface Rock		N	-	-	Assume no rock excavation required.
Subsurface water		N	-	-	No dewatering included.
Cut/Fill		-	-	-	Use existing site materials to grade the site and avoid off-site borrow.
Disposal of debris		-	-	-	Disposed of on-site.
Permanent Stormwater		-	-	-	New stormwater to be collected in ditches and routed to new permitted outfall
Construction Stormwater		-	-	-	Erosion control will be in accordance with state and local guidelines and regulations and will include best management practices such as silt fence, rock check dams, slope protection, construction exits, and stormwater pond(s) for construction and permanent. A SWPPP will be prepared.
Roads		Y	-	-	All new roads for site
Surfacing		-	-	-	Main access roads shall be paved. Maintenance roads and areas will be covered with crushed rock. Other areas top soil and seeded.
Soil Bearing Capacity		-	-	-	Soil bearing capacity not available. To be determined by geotechnical investigation. Foundation types assumed as noted below based on an allowable bearing capacity of approximately 2,500 psf.
Foundation type		-	-	-	Assume CTG's will be pile-supported. All other equipment/structures will be supported on shallow foundations (mats or footings). A geotechnical investigation will be needed to confirm these assumptions.
Transformer Containment		-	-	-	Containment for oil-filled transformer will be provided with an open pit design.
Enclosures					
	CTG Enclosures	Y	3	100%	Enclosure housing each CTG
	Water Treatment Building	Y	1	100%	Building housing water treament equipment and fire water pumps
	Electrical (see electrical section)	Y	-	-	
	Warehouse/Admin Facilities	Y	1	100%	
Maintenance cranes		N	-	-	
Guardshack		Y			New guard shack
Site Security		-	-	-	Included in Owner's costs
Landscaping		-	-	-	Minimal landscaping included. Disturbed areas will be seeded for erosion control.
Fence		Y			New fence around perimeter of new plant facilities
CONSTRUCTION					
Utilities					
	Power	Y	-	-	Construction power from aux. generators
	Communication	Y	-	-	Cellular
	Construction Water	Y	-	-	Tie into new well
	Potable Water	Y	-	-	Trucked until City potable tie-in connection is commissioned
	Sanitary	Y	-	-	Portable facilities provided by construction contractors
Parking		Y	-	-	New permanent parking adjacent to Admin/Warehouse building and Water Treament building. Temporary construction parking to be identified.
Gate Entry					
	Main	Y	-	-	New guard shack
	Personnel/Craft	Y	-	-	New main gate/consturction entrance
	Delivery	Y	-	-	New slide gate for construction
Construction Field Office / Trailers					
	Owner	Y	-	-	Trailers in Owners Costs.
	Engineer	Y	-	-	Trailers in Owners Costs.
	Vendors	Y	-	-	Trailers in Owners Costs.
	Contractors	Y	-	-	Trailers in Owners Costs.
	Site Services	Y	-	-	Trailers in Owners Costs.
Laydown area		Y	-	-	On site areas to be identified
Warehouses		Y	-	-	Contractor will provide necessary storage space during construction.
OWNER COSTS / MISC.					
Permits					

East Kentucky Power Cooperative
Tygarts Creek Simple Cycle
Scope Assumptions Matrix

BURNS McDONNELL

		Y/N	Number	% Capacity (per Unit)	Notes
	See Permit Matrix	Y	-	-	EKPC w/ BMcD Support.
Owner's Costs					
	Project Development	Y	-	-	Allowance to be included
	Owner's Operations Personnel	Y	-	-	Allowance to be included
	Owner's Project Management	Y	-	-	Allowance to be included
	Owner's Engineer	N	-	-	
	Owner's Legal Counsel	Y	-	-	Allowance to be included
	Political Concessions / Area Development Fees	Y	-	-	Allowance to be included
	Permitting & License Fees	Y	-	-	Allowance to be included
	Land	Y	-	-	Allowance to be included
	Water Rights Costs	Y	-	-	Allowance to be included
	Water Infrastructure and Supply to Site	Y	-	-	New well water for supply
	Natural Gas Infrastructure and Supply to Site	N	-	-	Existing pipeline adjacent to site
	Labor Camp	N	-	-	
	Permanent Plant Operating Spare Parts	Y	-	-	Allowance to be included
	Maintenance Tools & Equipment	Y	-	-	Allowance to be included
	Permanent Plant Equipment & Furnishings	Y	-	-	Allowance to be included
	Sales Tax	Y	-	-	Sales tax is excluded, other than for non-permanent consumables and supplies
	Escalation	Y	-	-	Allowance to be included
	Owner's Contingency	Y	-	-	Allowance to be included
	Interest During Construction	N	-	-	Excluded
	Temporary Utilities	Y	-	-	Included in EPC costs
	Startup Testing Fuels and Consumables	Y	-	-	Allowance to be included
	Operator training	Y	-	-	Allowance to be included
	Site Security	Y	-	-	Allowance to be included
EXCLUSIONS					
	Taxes	-	-	-	Sales, use, gross receipts, property, and other types.
	Insurance	-	-	-	All insurance other than General Liability being carried as a project cost
	Sound abatement above normal supply	-	-	-	
	Aesthetic landscaping other than erosion control	-	-	-	
	High escalation assocated with extreme market conditions	-	-	-	
	Financing fees	-	-	-	
	Interest during construction	-	-	-	

APPENDIX C – WATER MASS BALANCES



no.	date	by	ckd	description
0	6/5/23	DKE	BDH	Preliminary

NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Assumes 1% of Total Steaming Rate as Makeup
4. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	85
Wet Bulb Temp ºF	75
Evap Coolers	ON

PRELIMINARY

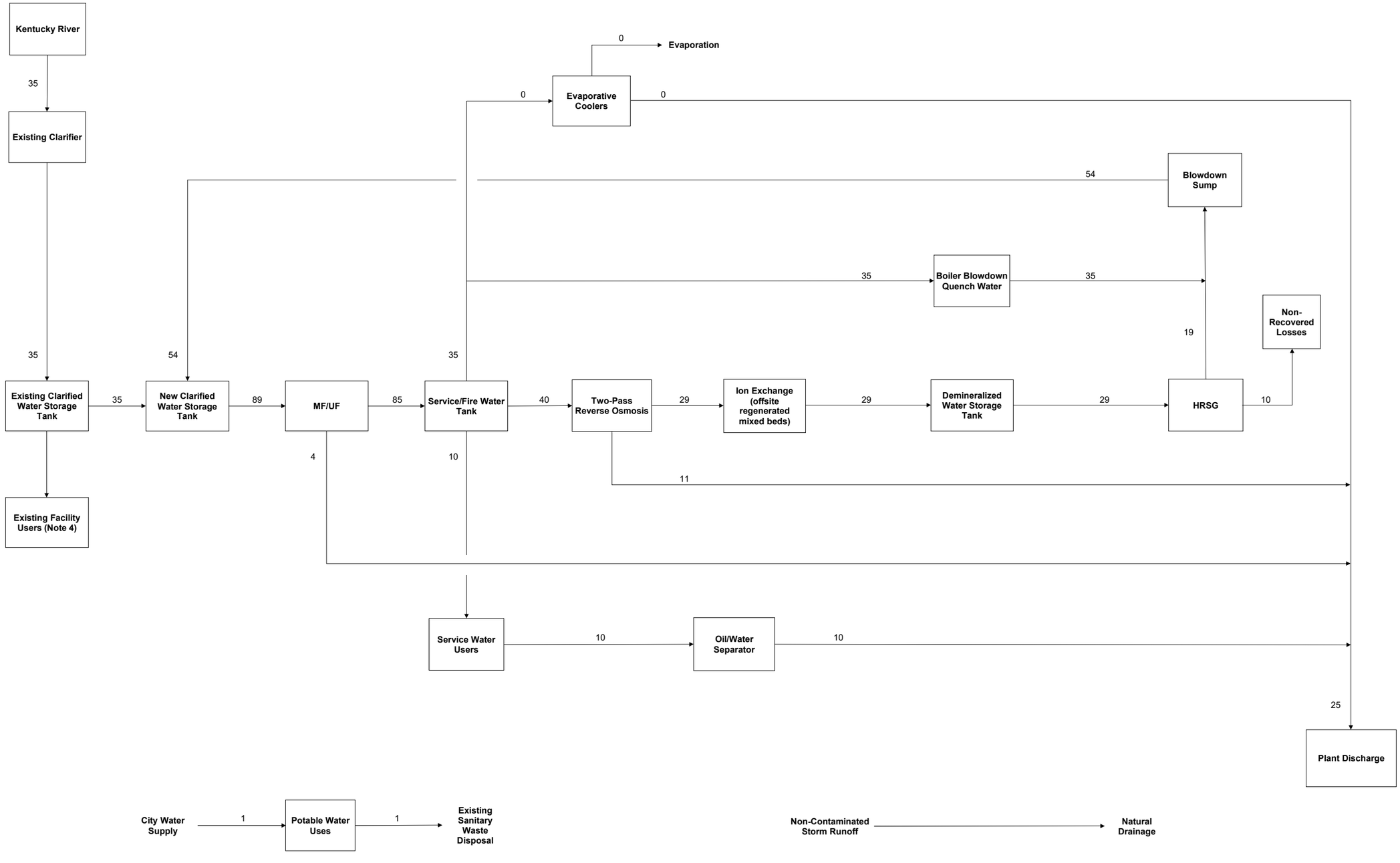
BURNS McDONNELL

date 6/5/2023	detailed D. Elliott
designed D. Elliott	checked B. Hansen

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - SMITH
Water Mass Balance - 2x1 5000H
Unfired 2x100% 85°F Evap ON

project 157787	contract
drawing **WMB - 01**	rev. **---** **0**
sheet 1 of 1 sheets	
file	



no.	date	by	ckd	description
0	6/5/23	DKE	BDH	Preliminary

NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Assumes 1% of Total Steaming Rate as Makeup
4. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	59
Wet Bulb Temp ºF	51
Evap Coolers	OFF

PRELIMINARY

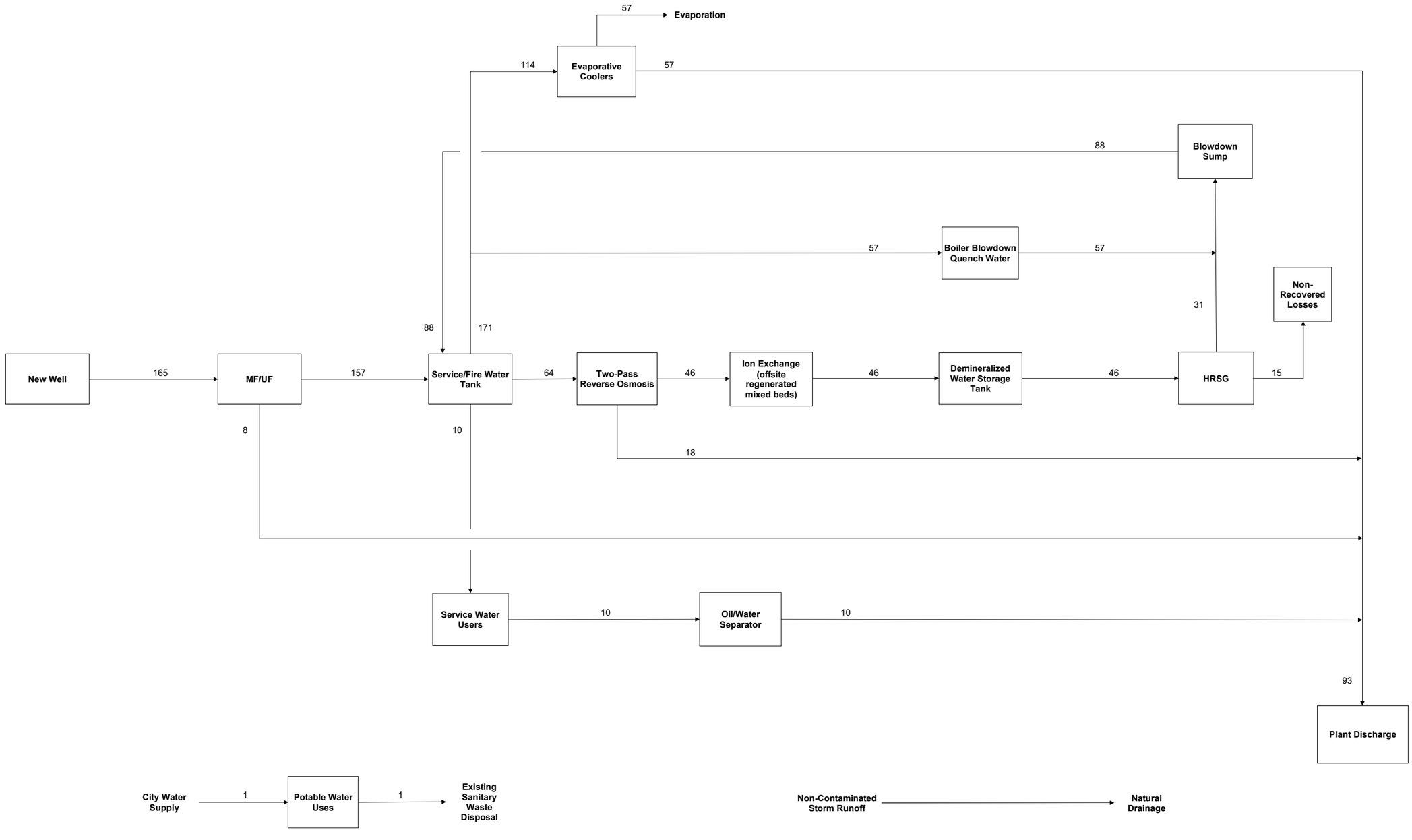
BURNS McDONNELL

date 6/5/2023	detailed D. Elliott
designed D. Elliott	checked B. Hansen

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - SMITH
Water Mass Balance - 2x1 5000H
Unfired 2x100% 59°F Evap OFF

project 157787	contract
drawing **WMB - 02**	rev. **---** **0**
sheet 1 of 1 sheets	
file	



no.	date	by	ckd	description
0	7/24/23	DKE	BDH	Preliminary

NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Assumes 1% of Total Steaming Rate as Makeup
4. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	85
Wet Bulb Temp ºF	75
Evap Coolers	ON

PRELIMINARY

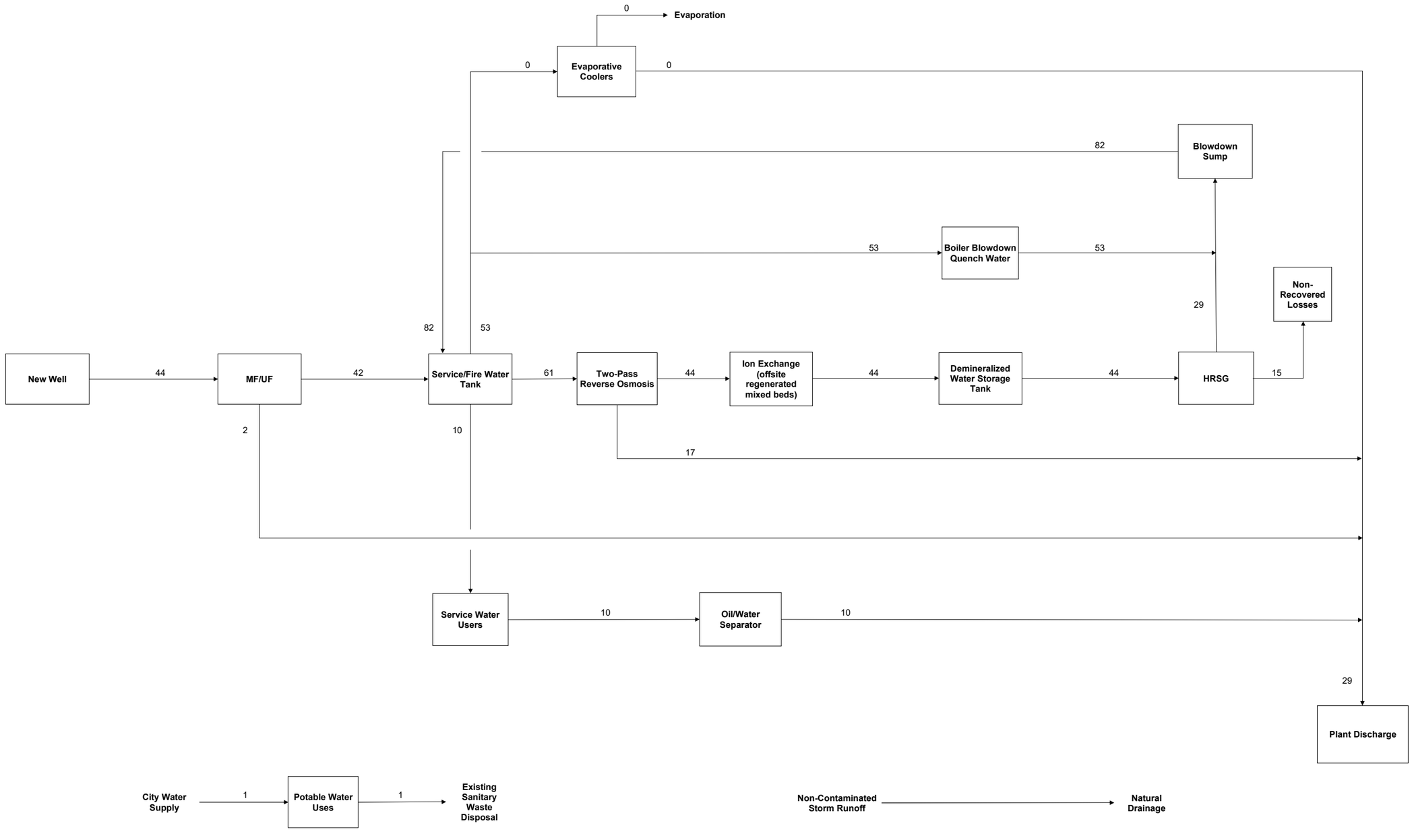
BURNS McDONNELL

date 7/24/2023	detailed D. Elliott
designed D. Elliott	checked B. Hansen

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - TYGART
Water Mass Balance - 3x1 5000H
Unfired 3x100% 85°F Evap ON

project 157787	contract
drawing **WMB - 01**	rev. **---** **0**
sheet 1 of 1 sheets	
file	



no.	date	by	ckd	description
0	7/24/23	DKE	BDH	Preliminary

NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Assumes 1% of Total Steaming Rate as Makeup
4. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	59
Wet Bulb Temp ºF	51
Evap Coolers	OFF

PRELIMINARY

BURNS McDONNELL

date 7/24/2023	detailed D. Elliott
designed D. Elliott	checked B. Hansen

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - TYGART
Water Mass Balance - 3x1 5000H
Unfired 3x100% 59°F Evap OFF

project 157787	contract
drawing **WMB - 02**	rev. **---** **0**
sheet 1 of 1 sheets	
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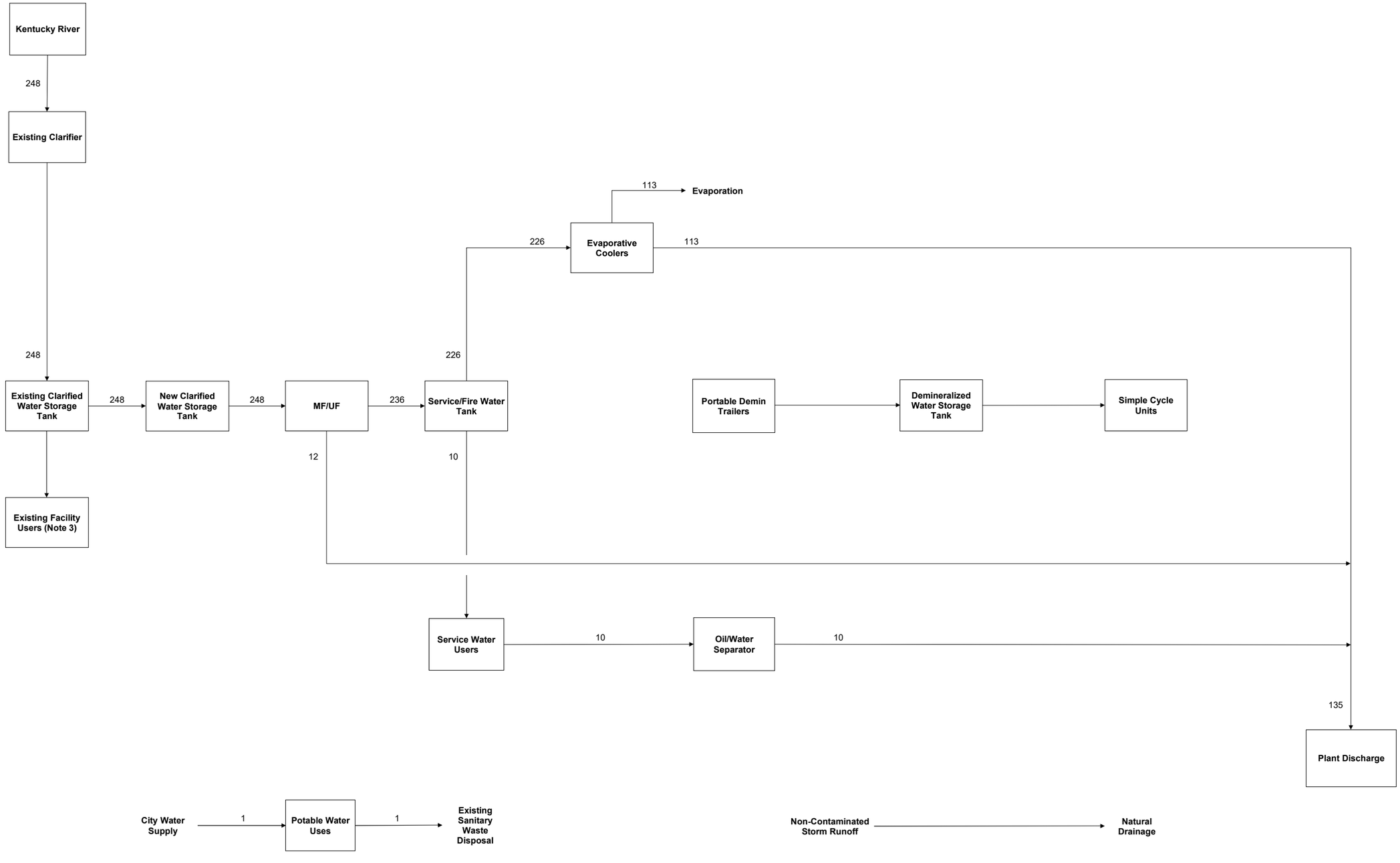

no.	date	by	ckd	description

NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	110
Wet Bulb Temp ºF	87
Evap Coolers	ON

PRELIMINARY

BURNS McDONNELL

date 6/5/2023	detailed D. Elliott
designed D. Elliott	checked

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - SMITH
Water Mass Balance - SCGT
Extreme Max GTG

project 157787	contract
drawing **WMB - 01**	rev. **---** **0**
sheet 1 of 1 sheets	
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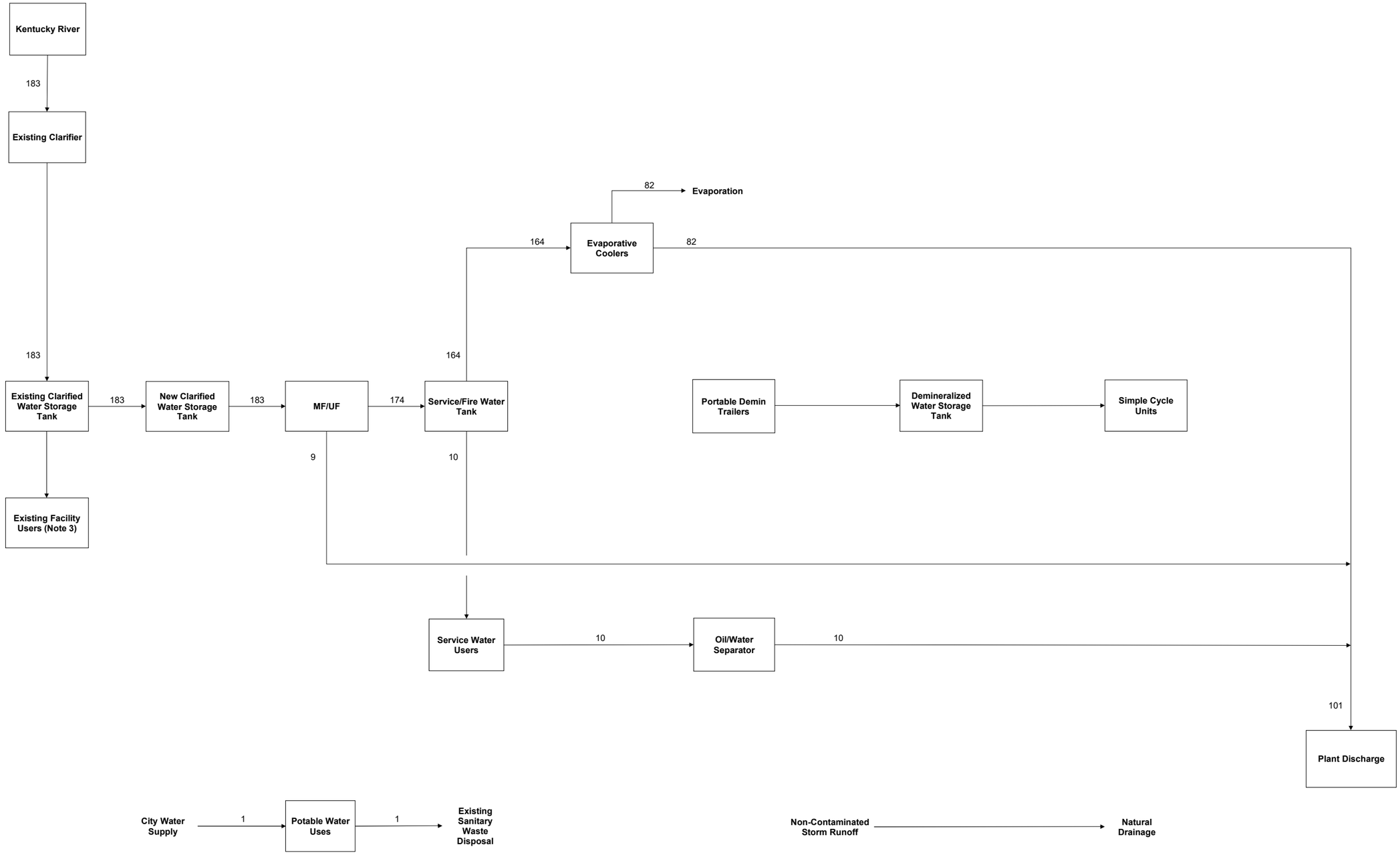

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NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	95
Wet Bulb Temp ºF	78
Evap Coolers	ON

PRELIMINARY

BURNS McDONNELL

date 6/5/2023	detailed D. Elliott
designed D. Elliott	checked

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy® Cooperative

EKPC - SMITH
Water Mass Balance - SCGT
Summer Case

project 157787	contract	
drawing **WMB - 02**	**---**	rev. **0**
sheet 1 of 1 sheets		
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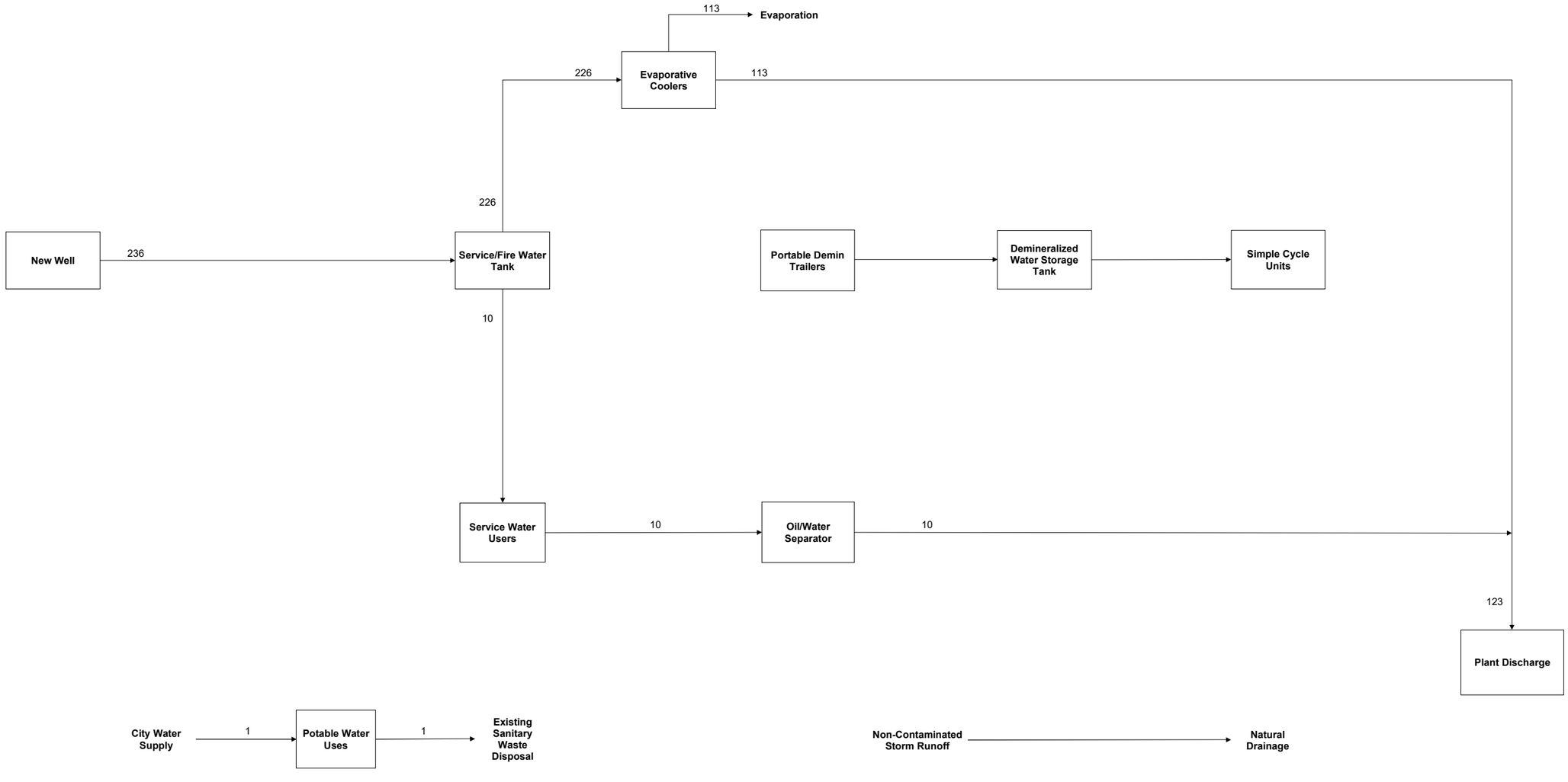

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NOTES:

1. Flows are shown in gallons per minute (gpm) and rounded to the nearest gpm.
2. Flows are based on average daily conditions.
3. Refer to existing plant water balances for existing flow information. Flows from existing users not included within this water balance.

DESIGN CRITERIA:

Dry Bulb Temp ºF	110
Wet Bulb Temp ºF	87
Evap Coolers	ON

PRELIMINARY

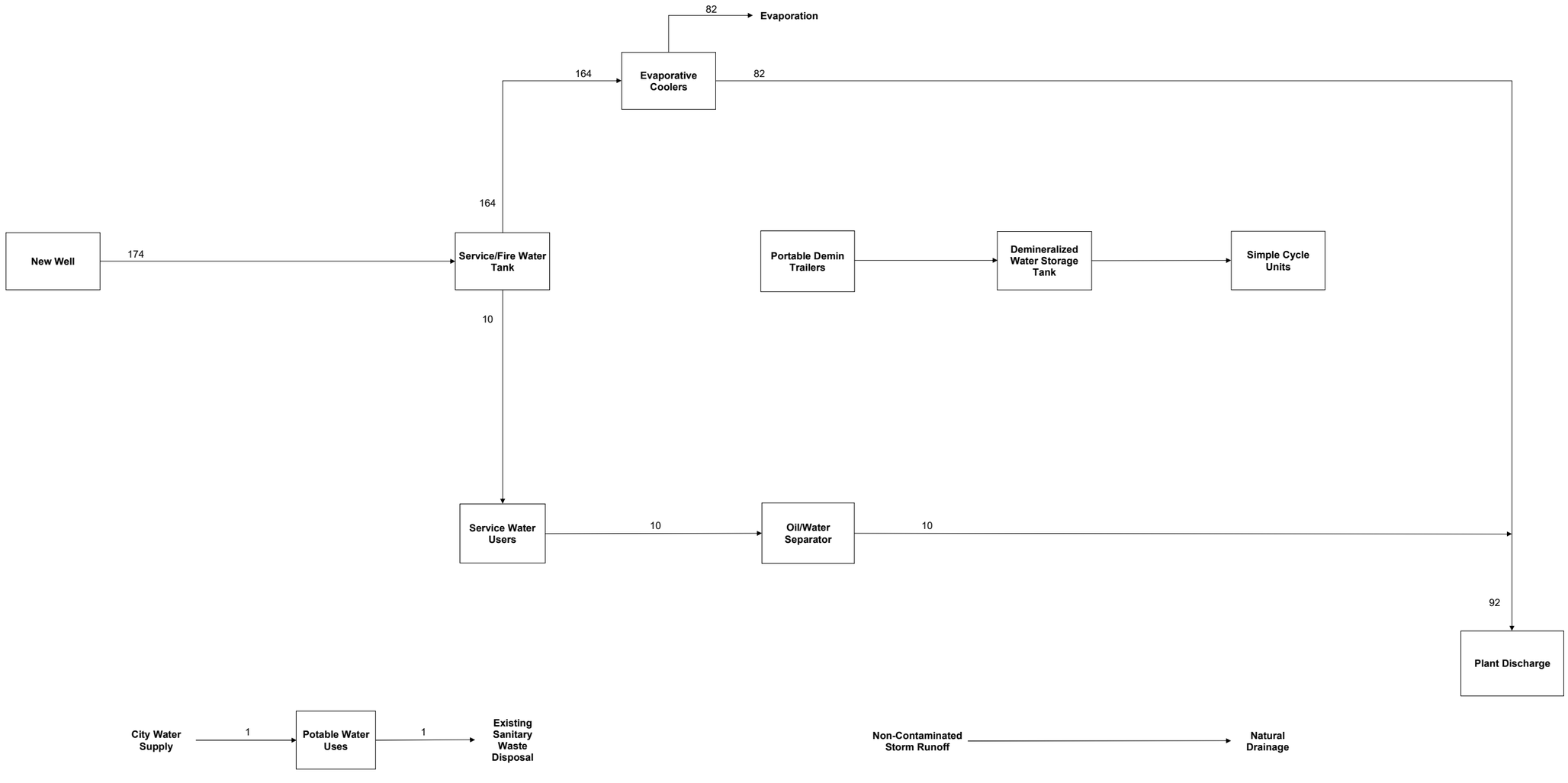
BURNS McDONNELL

date 6/5/2023	detailed D. Elliott
designed D. Elliott	checked

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - Tygart Creek
Water Mass Balance - SCGT
Extreme Max GTG

project 157787	contract
drawing **WMB - 01**	rev. **---** **0**
sheet 1 of 1 sheets	
file	



no.	date	by	ckd	description

NOTES:

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2. Flows are based on average daily conditions.
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DESIGN CRITERIA:

Dry Bulb Temp ºF	95
Wet Bulb Temp ºF	78
Evap Coolers	ON

PRELIMINARY

BURNS McDONNELL

date 6/5/2023	detailed D. Elliott
designed D. Elliott	checked

EAST KENTUCKY POWER COOPERATIVE
A Touchstone Energy Cooperative

EKPC - Tygart Creek
Water Mass Balance - SCGT
Summer Case

project 157787	contract
drawing **WMB - 02**	rev. **---** **0**
sheet 1 of 1 sheets	
file	

APPENDIX D – EQUIPMENT LISTS

157785 - Liberty RICE Equipment List

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor	# Qty
Reciprocating Internal Combustion Engine (RICE)				
Charge Air Filter	5.1150	5.8320	Outdoor	12
Compact Gas Ramp	5.1150	5.8320	Indoor	6
Dosing Unit	5.1150	5.8320	Indoor	6
Engine Genset	5.1150	5.1150	Indoor	6
Engine Auxilary Area Platforms	5.1150	5.8320	Indoor	6
Engine Auxiliary Module (EAM)	5.1150	5.8320	Indoor	6
Engine Platforms	5.1150	5.8320	Indoor	6
Exhaust Gas (Nox) Analyzer	5.1150	5.8320	Outdoor	6
Exhaust Gas Probe	5.1150	5.8320	Outdoor	6
Exhaust Gas Module (EGM)	5.1150	5.8320	Indoor	6
Exhaust Gas Module Support Steel	5.1150	5.8320	Indoor	6
Exhaust Gas Ventilation Fan	5.1150	5.8320	Indoor	6
Exhaust Gas Resonator	5.1150	5.8320	Outdoor	6
Exhaust Gas Silencer	5.1150	5.8320	Outdoor	6
Expansion Vessels	5.1150	5.8320	Indoor	6
Fuel Gas Analyzer Unit	5.1150	5.8320	Indoor	1
Generator Duct	5.1150	5.8320	Indoor	6
Lube Oil Cooler	5.1150	5.8320	Indoor	6
Lube Oil Transfer Pumps	5.1150	5.8320	Indoor	2
Mixing Duct	5.1150	5.8320	Indoor	6
Mobile Lube Oil Pump	5.1150	5.8320	Indoor	1
Modular Pipe Rack	5.1150	5.8320	Indoor	6
Nox Sensor System	5.1150	5.8320	Indoor	6
Oil Mist Separator Unit	5.1150	5.8320	Indoor	6
Radiator Bank	5.1150	5.8320	Outdoor	60
Selective Catalytic Reducer (SCR)	5.1150	5.8320	Outdoor	6
Urea Supply Pump Skid	5.1150	5.8320	Indoor	1
480V Engine 1 MCC	5.1150	5.8410	Indoor	1
480V Engine 2 MCC	5.1150	5.8410	Indoor	1
480V Engine 3 MCC	5.1150	5.8410	Indoor	1
480V Engine 4 MCC	5.1150	5.8410	Indoor	1
480V Engine 5 MCC	5.1150	5.8410	Indoor	1
480V Engine 6 MCC	5.1150	5.8410	Indoor	1
480V Engine 7 MCC	5.1150	5.8410	Indoor	1
480V Engine 8 MCC	5.1150	5.8410	Indoor	1
480V Engine 9 MCC	5.1150	5.8410	Indoor	1
480V Engine 10 MCC	5.1150	5.8410	Indoor	1
480V Engine 11 MCC	5.1150	5.8410	Indoor	1
480V Engine 12 MCC	5.1150	5.8410	Indoor	1
BOP 125VDC Battery & UPS	5.1150	5.8410	Indoor	1
Fire Water Pumps				
Electric Fire Water Pump	5.2150	5.8320	Indoor	1
Diesel Fire Water Pump	5.2150	5.8320	Indoor	1

157785 - Liberty RICE Equipment List

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor	# Qty
Jockey Pump	5.2150	5.8320	Indoor	1
Miscellaneous Pumps				
Cooling Water Transfer Pump	5.2190	5.8320	Indoor	1
Waste Water Sump Pump	5.2190	5.8320	Indoor	1
Service Water Transfer Pumps	5.2190	5.8320	Indoor	2
Fuel Oil Unloading Pumps	5.2190	5.8320	Outdoor	3
Fuel Oil Forwarding Pumps	5.2190	5.8320	Outdoor	3
Control Valves				
Gas Pressure Regulating Skid	5.2530	5.8320	Outdoor	2
Compressed Air Equipment				
Instrument Air Compressors	5.2710	5.8320	Indoor	2
Instrument Air Dryer	5.2710	5.8320	Indoor	2
Starting Air Compressors				
Starting Air Compressors	5.2711	5.8320	Indoor	2
Fuel Gas Conditioning				
Gas Filter/Coalescer Skid	5.2762	5.8320	Outdoor	1
Fuel Gas Heating				
Fuel Gas Heater Skid	5.2763	5.8320	Outdoor	1
Fuel Oil Heater Skid	5.2763	5.8320	Outdoor	1
Oil/Water Separator				
Oil/Water Separator	5.2940	5.8220	Outdoor	1
Oil/Water Separator Pumps	5.2940	5.8220	Outdoor	2
Shop Fabricated Metallic Tanks				
New Oil Tank	5.2980	5.8320	Indoor	1
Service/Used Oil Tank	5.2980	5.8320	Indoor	1
Waste Water Tank	5.2980	5.8320	Indoor	1
Maintenance Water Tank	5.2980	5.8320	Indoor	1
Dry Air Receiver	5.2980	5.8320	Indoor	1
Wet Air Receiver	5.2980	5.8320	Indoor	1
Starting Air Receiver	5.2980	5.8320	Indoor	2
Shop-Fabricated FRP Tanks				
Urea Storage Tank	5.2982	5.8320	Indoor	1
Sanitary Treament System				
Sanitary Treament System	5.3430	5.8320	Indoor	1
Pre-Engineered Metal Building				
Engine Hall	5.4310	5.8320	Outdoor	1
Electrical Equipment Enclosures	5.4310	5.8320	Outdoor	1
Warehouse	5.4310	5.8320	Outdoor	1
Bride Crane				
6-ton Bridge Crane	5.4312	5.8320	Indoor	1
1-ton Monorail Crane	5.4312	5.8320	Indoor	1
Vent Fans				
Generator Side Fans	5.4440	5.8320	Indoor	-
Auxiliary Side Fans	5.4440	5.8320	Indoor	-
Gravity Ridge Vent				
Engine Hall Ridge Vent	5.4441	5.8320	Indoor	-
Precast Concrete Firewalls				
Concrete Firewalls around GSU Transformers	5.4515	5.8320	Outdoor	-
Structural Steel				
Cable Bus Support Steel	5.4520	5.8320	Both	-

157785 - Liberty RICE Equipment List

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor	# Qty
Charge Air Filter & Mix Duct Support Structures and Platforming	5.4520	5.8320	Outdoor	-
SCR and Resonator Support Structures and Platforming	5.4520	5.8320	Outdoor	-
Silencer & Ductwork Support Structure and Platforming	5.4520	5.8320	Outdoor	-
Radiator Support Structures and Platforming	5.4520	5.8320	Outdoor	-
Tank Enclosure Platforming Structures	5.4520	5.8320	Indoor	-
Pipe Rack Structures	5.4520	5.8320	Both	-
High Voltage Breaker Support Structures	5.4520	5.8320	Outdoor	-
Generating Step-Up Transformer Platforming Structures	5.4520	5.8320	Outdoor	-
SCR exhaust ducts	5.4520	5.8320	Outdoor	7
Header exhaust ducts	5.4520	5.8320	Outdoor	2
Rupture disk cages (Weather Covers)	5.4520	5.8320	Outdoor	20
Misc Pipe and Cable Tray Supplemental Steel Supports	5.4520	5.8320	Both	-
Ductwork and Breeching				
Charge Air Ducts	5.4540	5.8320	Indoor	24
Ductwork Expansion Joints				
Metal Bellows	5.4550	5.8320	Indoor	24
Generator Step-up Transformers				
Generator Step-Up Transformer 1	5.5110	5.5110	Outdoor	1
Generator Step-Up Transformer 2	5.5110	5.5110	Outdoor	1
Emergency Generator				
Auxiliary Generator	5.5240	5.8410	Outdoor	1
Medium Voltage & Low Voltage Switchgear & Relay Panels				
13.8kV Generator Switchgear 1	5.5310	5.8410	Indoor	1
13.8kV Generator Switchgear 2	5.5310	5.8410	Indoor	1
13.8kV Generator Switchgear 3	5.5310	5.8410	Indoor	1
13.8kV Generator Switchgear 4	5.5310	5.8410	Indoor	1
Station Auxiliary Transformer 1	5.5310	5.8410	Outdoor	1
Station Auxiliary Transformer 2	5.5310	5.8410	Outdoor	1
Station Auxiliary Transformer 3	5.5310	5.8410	Outdoor	1
Station Auxiliary Transformer 4	5.5310	5.8410	Outdoor	1
480V Switchgear 1	5.5310	5.8410	Indoor	1
480V Switchgear 2	5.5310	5.8410	Indoor	1
480V Switchgear 3	5.5310	5.8410	Indoor	1
480V Switchgear 4	5.5310	5.8410	Indoor	1
480V Motor Control Centers				
480V BOP MCC 1	5.5330	5.8410	Indoor	1
480V BOP MCC 2	5.5330	5.8410	Indoor	1
125VDC Batteries, Charger & UPS				
125VDC Batteries, Disconnects, Switchboard, Bypass Transformer & Chargers	5.5430	5.8410	Indoor	-
UPS, Inverter & Bypass Switch	5.5430	5.8410	Indoor	-
Instruments				
Instruments	5.6210	5.8320	Indoor / Outdoor	-
Fuel Gas Chromatograph				
Fuel Gas Chromatograph System	5.6211	5.8320	Outdoor	1
Substation Package				
Surge Arrestors	5.7200	5.8411	Outdoor	-
Capacitor Voltage Transformers (CCVT)	5.7200	5.8411	Outdoor	-
Disconnect Switches	5.7200	5.8411	Outdoor	-
Insulators (Substation)	5.7200	5.8411	Outdoor	-
Conductor (HV Cable in Substation)	5.7200	5.8411	Outdoor	-
Terminals, Connectors & Bus Supports	5.7200	5.8411	Outdoor	-
CCVT Junction Box Assemblies	5.7200	5.8411	Outdoor	-
T-Line Insulators	5.7200	5.8411	Outdoor	-
Mechanical Construction (Misc. Pumps, Specials, HVAC)				
Service Water Bladder Tank	5.8320	5.8320	Indoor	1

157785 - Liberty RICE Equipment List

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor	# Qty
Potable Water Booster Pump	5.8320	5.8320	Indoor	1
Potable Water Heater	5.8320	5.8320	Indoor	2
Emergency Eye Wash / Safety Shower	5.8320	5.8320	Indoor	4
Lift Station	5.8220	5.8220	Outdoor	1
Lube Oil Cartridge Filter	5.8320	5.8320	Indoor	1
Lube Oil Tank Heater	5.8320	5.8320	Indoor	1
Space Conditioning				
Admin Room(s) Air Handling Units	5.8340	5.8340	Indoor	5
Admin Room(s) Air Terminal Units	5.8340	5.8340	Indoor	5
Building Intake Louvers	5.8340	5.8340	Indoor	12
Building Exhaust Fans	5.8340	5.8340	Indoor	10
Building Electric Heaters	5.8340	5.8340	Indoor	30
Field Erected Tanks				
Fire Water Tank	5.8570	5.8570	Outdoor	1
Tank Immersion Heater	5.8570	5.8570	Outdoor	2
Fuel Oil Tank	5.8570	5.8570	Outdoor	2

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AMMONIA TOTE	OWNER	5.8320	INDOOR
AUXILIARY BOILER CHEMICAL TOTE	OWNER	5.8320	INDOOR
NITROGEN BOTTLE RACK	OWNER	5.8320	OUTDOOR
OFF-SITE SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
ON-SITE SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
OXYGEN SCAVENGER TOTE	OWNER	5.8320	INDOOR
RO ANTI-SCALANT TOTE	OWNER	5.8320	INDOOR
RO SODIUM BISULFITE TOTE	OWNER	5.8320	INDOOR
RO SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
RO SULFURIC ACID TOTE	OWNER	5.8320	INDOOR
UF CEB CITRIC ACID TOTE	OWNER	5.8320	INDOOR
UF CEB SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
UNIT 1 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
UNIT 2 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
STEAM TURBINE GENERATOR (STG)	5.1110	5.8320	INDOOR
STG HOTBOX	5.1110	5.8320	INDOOR
STG HP/IP TURBINE	5.1110	5.8320	INDOOR
STG LP TURBINE	5.1110	5.8320	INDOOR
STG BEARING LIFT OIL FILTER 1	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL FILTER 2	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL PUMP 1	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL PUMP 2	5.1110	5.1110	INDOOR
STG EMERGENCY LUBE OIL PUMP	5.1110	5.1110	INDOOR
STG LUBE OIL COOLER 1	5.1110	5.8320	INDOOR
STG LUBE OIL COOLER 2	5.1110	5.8320	INDOOR
STG LUBE OIL FILTER 1	5.1110	5.8320	INDOOR
STG LUBE OIL FILTER 2	5.1110	5.8320	INDOOR
STG LUBE OIL MODULE/TANK	5.1110	5.8320	INDOOR
STG LUBE OIL PUMP 1	5.1110	5.8320	INDOOR
STG LUBE OIL PUMP 2	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUST OIL SEPARATOR	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUSTER 1	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUSTER 2	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT HEATER	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT PUMP	5.1110	5.8320	INDOOR
STG GLAND STEAM CONDENSER	5.1110	5.8320	INDOOR
STG GLAND STEAM EXHAUSTER 1	5.1110	5.1110	INDOOR
STG GLAND STEAM EXHAUSTER 2	5.1110	5.1110	INDOOR
STG HYDRAULIC OIL UNIT/TANK	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING CIRCULATION PUMP 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING CIRCULATION PUMP 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING FAN 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING FAN 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL FILTER 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL FILTER 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL HEATER	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL PUMP 1	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL PUMP 2	5.1110	5.8320	INDOOR
STG TRANSFORMER SEE	5.1110	5.8410	INDOOR
STG TRANSFORMER SEE PACKAGE	5.1110	5.8410	INDOOR
STG VT SURGE CUBICLE	5.1110	5.8410	INDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
COMMON GT WATER WASH SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - UNIT 1	5.1120	5.8320	INDOOR
GT1 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT1 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT1 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT1 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT1 ENCLOSURE	5.1120	5.8320	INDOOR
GT1 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT1 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT1 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT1 GENERATOR	5.1120	5.8320	INDOOR
GT1 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT1 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT1 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT1 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT1 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT1 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT1 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT1 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT1 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT1 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT1 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT1 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT1 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT1 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - UNIT 2	5.1120	5.8320	INDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT2 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT2 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT2 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT2 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT2 ENCLOSURE	5.1120	5.8320	INDOOR
GT2 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT2 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT2 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT2 GENERATOR	5.1120	5.8320	INDOOR
GT2 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT2 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT2 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT2 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT2 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT2 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT2 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT2 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT2 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT2 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT2 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT2 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT2 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT2 WATER INJECTION SKID	5.1120	5.8320	INDOOR
HRSG1	5.1215	5.8320	INDOOR
HRSG1 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG1 AIG BLOWER B	5.1215	5.8320	INDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
HRSG1 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG1 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG1 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG1 COOLING BLOWER B	5.1215	5.8320	INDOOR
HRSG1 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG1 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG1 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
GT1 LP CO2 COMPRESSOR FEED 1	5.1215	5.8320	INDOOR
GT1 LP CO2 COMPRESSOR FEED 2	5.1215	5.8320	INDOOR
HRSG1 MOVS	5.1215	5.8320	INDOOR
HRSG2	5.1215	5.8320	INDOOR
HRSG2 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG2 AIG BLOWER B	5.1215	5.8320	INDOOR
HRSG2 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG2 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG2 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG2 COOLING BLOWER B	5.1215	5.8320	INDOOR
HRSG2 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG2 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG2 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
GT2 LP CO2 COMPRESSOR FEED 1	5.1215	5.8320	INDOOR
GT2 LP CO2 COMPRESSOR FEED 2	5.1215	5.8320	INDOOR
HRSG2 MOVS	5.1215	5.8320	INDOOR
BOILER FEEDWATER PUMP 1A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 1B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 1A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 1B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 2A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 2B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 2A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 2B	5.2110	5.8320	INDOOR
CONDENSATE PUMP A	5.2130	5.8320	INDOOR
CONDENSATE PUMP B	5.2130	5.8320	INDOOR
CONDENSATE PUMP C	5.2130	5.8320	INDOOR
DIESEL FIRE PUMP	5.2150	5.8320	INDOOR
ELECTRIC FIRE PUMP	5.2150	5.8320	INDOOR
JOCKEY FIRE PUMP AND ENCLOSURE FEED	5.2150	5.8320	INDOOR
WASTEWATER SUMP PUMP A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP B	5.2180	5.8320	OUTDOOR
UNIT 1 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 1 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
UNIT 2 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 2 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
CLARIFIED WATER TRANSFER PUMP A	5.2180	5.8320	INDOOR
CLARIFIED WATER TRANSFER PUMP B	5.2180	5.8320	INDOOR
FUEL OIL FORWARDING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL TRANSFER PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL TRANSFER PUMP A	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
DEMINERALIZED WATER PUMP A	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP B	5.2190	5.8320	INDOOR
SERVICE WATER PUMP A	5.2190	5.8320	INDOOR
SERVICE WATER PUMP B	5.2190	5.8320	INDOOR
POWERHOUSE SANITARY LIFT STATION	5.2191	5.8220	OUTDOOR
WAREHOUSE/ADMIN SANITARY LIFT STATION	5.2191	5.8220	OUTDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AIR-COOLED HEAT EXCHANGER (ACHE)	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 1	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 10	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 11	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 12	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 13	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 14	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 15	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 16	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 17	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 18	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 19	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 2	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 20	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 21	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 22	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 23	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 24	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 3	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 4	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 5	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 6	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 7	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 8	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 9	5.2215	5.8320	OUTDOOR
AIR-COOLED CONDENSER (ACC)	5.2230	5.8320	OUTDOOR
ACC DUCT DRAIN POT PUMP A	5.2230	5.8320	OUTDOOR
ACC DUCT DRAIN POT PUMP B	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
ACC STREET 2 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 4	5.2230	5.8320	OUTDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
ACC STREET 6 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
CONDENSATE STORAGE TANK	5.2230	5.8320	INDOOR
DEAERATOR EJECTOR	5.2230	5.8320	INDOOR
ACC CLEANING WATER PUMP SKID	5.2230	5.8320	OUTDOOR
LIQUID RING VACUUM PUMP (LRVP) A	5.2230	5.8320	INDOOR
LRVP PLATE AND FRAME HEAT EXCHANGER A	5.2230	5.8320	INDOOR
LRVP RECIRCULATION PUMP A	5.2230	5.8320	INDOOR
LRVP SEPARATOR TANK A	5.2230	5.8320	INDOOR
LIQUID RING VACUUM PUMP (LRVP) B	5.2230	5.8320	INDOOR
LRVP PLATE AND FRAME HEAT EXCHANGER B	5.2230	5.8320	INDOOR
LRVP RECIRCULATION PUMP B	5.2230	5.8320	INDOOR
LRVP SEPARATOR TANK B	5.2230	5.8320	INDOOR
POTABLE WATER WATER HEATER TANK 2	5.2490	5.8320	INDOOR
POTABLE WATER WATER HEATER TANK 3	5.2490	5.8320	INDOOR
POTABLE WATER WATER HEATER TANK 4	5.2490	5.8320	INDOOR
POTABLE WATER WATER HEATER TANK 5	5.2490	5.8320	INDOOR
POTABLE WATER WATER HEATER TANK 6	5.2490	5.8320	INDOOR
POTABLE WATER WATER HEATER TANK 7	5.2490	5.8320	OUTDOOR
AIR COMPRESSOR A	5.2710	5.8320	INDOOR
AIR COMPRESSOR B	5.2710	5.8320	INDOOR
AIR COMPRESSOR C	5.2710	5.8320	INDOOR
AIR DRYER A	5.2710	5.8320	INDOOR
AIR DRYER B	5.2710	5.8320	INDOOR
AQUEOUS AMMONIA STORAGE TANK	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA UNLOADING SKID	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP A	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP B	5.2750	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER A	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER B	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER A	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER B	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER C	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR SKID	5.2762	5.8320	OUTDOOR
DRAINS TANK	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR	5.2762	5.8320	OUTDOOR
FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
AUXILIARY BOILER	5.2910	5.8320	INDOOR
AUXILIARY BOILER BLOWDOWN TANK	5.2910	5.8320	INDOOR
AUXILIARY BOILER DEAERATOR	5.2910	5.8320	INDOOR
AUXILIARY BOILER FD FAN	5.2910	5.8320	INDOOR
AUXILIARY BOILER FEEDWATER PUMP A	5.2910	5.8320	INDOOR
AUXILIARY BOILER FEEDWATER PUMP B	5.2910	5.8320	INDOOR
AUXILIARY STEAM ELECTRIC SUPERHEATER	5.2910	5.8320	INDOOR
WASH WATER DRAINS TANK	5.2940	5.8320	OUTDOOR
OIL WATER SEPARATOR	5.2940	5.8220	OUTDOOR
OIL WATER SEPARATOR PUMP A	5.2940	5.8220	OUTDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
OIL WATER SEPARATOR PUMP B	5.2940	5.8220	OUTDOOR
SANITARY LIFT STATION PUMP A	5.2940	5.8220	OUTDOOR
SANITARY LIFT STATION PUMP B	5.2940	5.8220	OUTDOOR
DRY AIR RECEIVER	5.2980	5.8320	INDOOR
WET AIR RECEIVER	5.2980	5.8320	INDOOR
PULSE AIR RECEIVERS	5.2980	5.8320	INDOOR
CLOSED COOLING WATER HEAD TANK	5.2980	5.8320	OUTDOOR
STG FLASH TANK	5.2980	5.8320	INDOOR
STG ATM DRAINS TANK	5.2980	5.8320	INDOOR
OFF-SITE SODIUM HYPOCHLORITE FEED SKID	5.3120	5.8320	INDOOR
OFF-SITE SODIUM HYPOCHLORITE FEED PUMP A	5.3120	5.8320	INDOOR
OFF-SITE SODIUM HYPOCHLORITE FEED PUMP B	5.3120	5.8320	INDOOR
HP PHOSPHATE TRANSFER PUMP	5.3120	5.8320	INDOOR
HP/IP PHOSPHATE TRANSFER PUMP	5.3120	5.8320	INDOOR
IP PHOSPHATE TRANSFER PUMP	5.3120	5.8320	INDOOR
HP PHOSPHATE TRANSFER PUMP	5.3120	5.8320	INDOOR
HP/IP PHOSPHATE TRANSFER PUMP	5.3120	5.8320	INDOOR
IP PHOSPHATE TRANSFER PUMP	5.3120	5.8320	INDOOR
AMMONIA CHEMICAL SKID	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP A	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP B	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED SKID	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP A	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP B	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEMICAL SKID	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEM FEED PUMP A	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEM FEED PUMP B	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE SHELTER HOUSE	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE TRANSFER PUMP A	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE TRANSFER PUMP B	5.3210	5.8320	INDOOR
HRSG 1 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
HRSG 2 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
RO RINSE PUMP A	5.3210	5.8320	INDOOR
RO RINSE PUMP B	5.3210	5.8320	INDOOR
RO SODIUM BISULFITE FEED PUMP A	5.3210	5.8320	INDOOR
RO SODIUM BISULFITE FEED PUMP B	5.3210	5.8320	INDOOR
RO ANTI-SCALANT FEED PUMP A	5.3210	5.8320	INDOOR
RO ANTI-SCALANT FEED PUMP B	5.3210	5.8320	INDOOR
RO SODIUM HYDROXIDE PUMP A	5.3210	5.8320	INDOOR
RO SODIUM HYDROXIDE PUMP B	5.3210	5.8320	INDOOR
RO SODIUM HYDROXIDE PUMP C	5.3210	5.8320	INDOOR
RO ACID FEED PUMP A	5.3210	5.8320	INDOOR
RO ACID FEED PUMP B	5.3210	5.8320	INDOOR
AUTOMATIC BACKWASH STRAINER & OIL/GREASE CARTRIDGE FILTER SKID	5.3210	5.8320	INDOOR
ABW STRAINER A	5.3210	5.8320	INDOOR
ABW STRAINER B	5.3210	5.8320	INDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
OIL/GREASE CARTRIDGE FILTER A	5.3210	5.8320	INDOOR
OIL/GREASE CARTRIDGE FILTER B	5.3210	5.8320	INDOOR
UF FILTER TRAIN A	5.3210	5.8320	INDOOR
UF FILTER TRAIN B	5.3210	5.8320	INDOOR
ULTRAFILTRATION (UF) BACKWASH PUMP SKID	5.3210	5.8320	INDOOR
UF BACKWASH PUMP A	5.3210	5.8320	INDOOR
UF BACKWASH PUMP B	5.3210	5.8320	INDOOR
UF CHEMICAL ENHANCED BACKWASH (CEB) SODIUM HYDROXIDE FEED SKID	5.3210	5.8320	INDOOR
UF CEB SODIUM HYDROXIDE PUMP A	5.3210	5.8320	INDOOR
UF CEB SODIUM HYDROXIDE PUMP B	5.3210	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE FEED SKID	5.3210	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE PUMP A	5.3210	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE PUMP B	5.3210	5.8320	INDOOR
UF CEB CITRIC ACID FEED SKID	5.3210	5.8320	INDOOR
UF CEB CITRIC ACID PUMP A	5.3210	5.8320	INDOOR
UF CEB CITRIC ACID PUMP B	5.3210	5.8320	INDOOR
UF BACKWASH TANK	5.3210	5.8320	INDOOR
CALCITE FILTERS	5.3210	5.8320	INDOOR
CALCITE FILTER	5.3210	5.8320	INDOOR
MIXED BED VALVE MANIFOLD	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL A	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL B	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL C	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL D	5.3220	5.8320	INDOOR
REVERSE OSMOSIS (RO) TRAIN A	5.3220	5.8320	INDOOR
1ST PASS RO FILTER A	5.3220	5.8320	INDOOR
1ST PASS RO BOOSTER PUMP A	5.3220	5.8320	INDOOR
2ND PASS RO FILTER A	5.3220	5.8320	INDOOR
2ND PASS RO BOOSTER PUMP A	5.3220	5.8320	INDOOR
RO CARTRIDGE FILTER A	5.3220	5.8320	INDOOR
REVERSE OSMOSIS (RO) TRAIN B	5.3220	5.8320	INDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
1ST PASS RO FILTER B	5.3220	5.8320	INDOOR
1ST PASS RO BOOSTER PUMP B	5.3220	5.8320	INDOOR
2ND PASS RO FILTER B	5.3220	5.8320	INDOOR
2ND PASS RO BOOSTER PUMP B	5.3220	5.8320	INDOOR
RO CARTRIDGE FILTER B	5.3220	5.8320	INDOOR
CLEAN IN PLACE (CIP) SKID	5.3220	5.8320	INDOOR
UF/RO CIP CARTRIDGE FILTER	5.3220	5.8320	INDOOR
UF/RO CIP TANK	5.3220	5.8320	INDOOR
UF/RO CIP TANK HEATER	5.3220	5.8320	INDOOR
UF/RO CIP FORWARDING PUMP	5.3220	5.8320	INDOOR
RO RINSE PUMP SKID	5.3220	5.8320	INDOOR
RO SODIUM BISULFITE FEED SKID	5.3220	5.8320	INDOOR
RO ANTI-SCALANT FEED SKID	5.3220	5.8320	INDOOR
RO SODIUM HYDROXIDE FEED SKID	5.3220	5.8320	INDOOR
RO ACID FEED SKID	5.3220	5.8320	INDOOR
SAMPLE ANALYSIS COOLER	5.3310	5.8320	INDOOR
SAMPLE ANALYSIS PANEL	5.3310	5.8320	INDOOR
SANITARY TREAMENT FACILITY	5.3430	5.8320	OUTDOOR
GTG BUILDING CRANE	5.4210	5.8320	INDOOR
STG BUILDING CRANE	5.4210	5.8320	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNIT (AHU)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNIT (AHU)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNIT (AHU)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNIT (AHU)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNIT (AHU)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNIT (AHU)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING FAN	5.4310B	5.4310B	OUTDOOR
POWER BLOCK BUILDING GAS UNIT HEATER (GUH)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING GAS UNIT HEATER (GUH)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING GAS UNIT HEATER (GUH)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING GAS UNIT HEATER (GUH)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING GAS UNIT HEATER (GUH)	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
POWER BLOCK BUILDING LOUVER	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATER (EUH)	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATER (EUH)	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATER (EUH)	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATER (EUH)	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATER (EUH)	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING FAN	5.4310B	5.4310B	OUTDOOR
WATER TREATMENT BUILDING LOUVER	5.4310B	5.4310B	INDOOR
WATER TREATMENT BUILDING SELF-CONTAINED AIR-CONDITIONING UNIT (SAU)	5.4310B	5.4310B	OUTDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNIT (VAV)	5.4311	5.4311	INDOOR
ADMINISTRATION BUILDING ROOF TOP UNIT (RTU)	5.4311	5.4311	OUTDOOR
GTG1 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG2 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
STG GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GTG1 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG2 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG1 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG2 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
STG GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG1 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG2 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STG ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STANDBY DIESEL GENERATOR	5.5240	5.8410	OUTDOOR
4160V SWGR A	5.5310	5.8410	INDOOR
4160V SWGR B	5.5310	5.8410	INDOOR
ACC MCC 1 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 2 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 3 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 4 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 5 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 6 (ACC PCM)	5.5310	5.8410	INDOOR
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP MCC 1	5.5310	5.8410	INDOOR
BOP MCC 2	5.5310	5.8410	INDOOR
BOP MCC 3	5.5310	5.8410	INDOOR
BOP MCC 4	5.5310	5.8410	INDOOR
ESS 480V SWGR A	5.5310	5.8410	INDOOR
ESS STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR B	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR C	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR D	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
STG 480V SWGR	5.5310	5.8410	INDOOR
STG STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
STG 480V SWGR	5.5310	5.8410	INDOOR
STG STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
WT 480V SWGR A	5.5310	5.8410	INDOOR
WT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
WT 480V SWGR B	5.5310	5.8410	INDOOR

157787 - SMITH 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
WT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 MCC	5.5310	5.8410	INDOOR
GTG2 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG2 MCC	5.5310	5.8410	INDOOR
HRSG1 MCC	5.5310	5.8410	INDOOR
HRSG2 MCC	5.5310	5.8410	INDOOR
STG MCC	5.5310	5.8410	INDOOR
UPS AND 125VDC SYSTEM	5.5310	5.8410	INDOOR
WATER TREATMENT MCC	5.5310	5.8410	INDOOR
PLANT COMMUNICATIONS EQUIPMENT (GAITRONICS)	5.5670	5.8410	INDOOR
DCS (BOP)	5.6110	5.8410	INDOOR
FUEL GAS CHROMATOGRAPH	5.6211	5.8320	OUTDOOR
POWER BLOCK BUILDING AIR HANDLING UNITS (AHU)	5.8340	5.8340	INDOOR
POWER BLOCK BUILDING FANS	5.8340	5.8340	OUTDOOR
POWER BLOCK BUILDING GAS UNIT HEATERS (GUH)	5.8340	5.8340	INDOOR
POWER BLOCK BUILDING LOUVERS	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATERS (EUH)	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING FANS	5.8340	5.8340	OUTDOOR
WATER TREATMENT BUILDING LOUVERS	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.8340	5.8340	OUTDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNITS (VAV)	5.8340	5.8340	INDOOR
ADMINISTRATION BUILDING FAN	5.8340	5.8340	OUTDOOR
ADMINISTRATION BUILDING ROOF TOP UNITS (RTU)	5.8340	5.8340	OUTDOOR
MAINTENANCE SHOP FAN	5.8340	5.8340	OUTDOOR
MAINTENANCE SHOP GAS UNIT HEATER (GUH)	5.8340	5.8340	INDOOR
MAINTENANCE SHOP LOUVER	5.8340	5.8340	INDOOR
MAINTENANCE SHOP/WAREHOUSE MAKE-UP AIR UNIT (MAU)	5.8340	5.8340	OUTDOOR
WAREHOUSE FAN	5.8340	5.8340	OUTDOOR
WAREHOUSE GAS UNIT HEATER (GUH)	5.8340	5.8340	INDOOR
WAREHOUSE LOUVER	5.8340	5.8340	INDOOR
GT1 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT2 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
STG GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
DEMINERALIZED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK HEATERS	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK HEATER	5.8570	5.8570	OUTDOOR
CLARIFIED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK A	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK B	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK HEATER	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK HEATER	5.8570	5.8570	OUTDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AMMONIA TOTE	OWNER	5.8320	INDOOR
AUXILIARY BOILER CHEMICAL TOTE	OWNER	5.8320	INDOOR
NITROGEN BOTTLE RACK	OWNER	5.8320	OUTDOOR
OFF-SITE SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
ON-SITE SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
OXYGEN SCAVENGER TOTE	OWNER	5.8320	INDOOR
RO ANTI-SCALANT TOTE	OWNER	5.8320	INDOOR
RO SODIUM BISULFITE TOTE	OWNER	5.8320	INDOOR
RO SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
RO SULFURIC ACID TOTE	OWNER	5.8320	INDOOR
UF CEB CITRIC ACID TOTE	OWNER	5.8320	INDOOR
UF CEB SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
COOLING TOWER POLYMER TOTE	OWNER	5.8320	INDOOR
COOLING TOWER CORROSION INHIBITOR TOTE	OWNER	5.8320	INDOOR
COOLING TOWER SCALE INHIBITOR TOTE	OWNER	5.8320	INDOOR
UNIT 1 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
UNIT 2 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
STEAM TURBINE GENERATOR (STG)	5.1110	5.8320	INDOOR
STG HOTBOX	5.1110	5.8320	INDOOR
STG HP/IP TURBINE	5.1110	5.8320	INDOOR
STG LP TURBINE	5.1110	5.8320	INDOOR
STG BEARING LIFT OIL FILTER 1	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL FILTER 2	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL PUMP 1	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL PUMP 2	5.1110	5.1110	INDOOR
STG EMERGENCY LUBE OIL PUMP	5.1110	5.1110	INDOOR
STG LUBE OIL COOLER 1	5.1110	5.8320	INDOOR
STG LUBE OIL COOLER 2	5.1110	5.8320	INDOOR
STG LUBE OIL FILTER 1	5.1110	5.8320	INDOOR
STG LUBE OIL FILTER 2	5.1110	5.8320	INDOOR
STG LUBE OIL MODULE/TANK	5.1110	5.8320	INDOOR
STG LUBE OIL PUMP 1	5.1110	5.8320	INDOOR
STG LUBE OIL PUMP 2	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUST OIL SEPARATOR	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUSTER 1	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUSTER 2	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT HEATER	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT PUMP	5.1110	5.8320	INDOOR
STG GLAND STEAM CONDENSER	5.1110	5.8320	INDOOR
STG GLAND STEAM EXHAUSTER 1	5.1110	5.1110	INDOOR
STG GLAND STEAM EXHAUSTER 2	5.1110	5.1110	INDOOR
STG HYDRAULIC OIL UNIT/TANK	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING CIRCULATION PUMP 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING CIRCULATION PUMP 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING FAN 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING FAN 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL FILTER 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL FILTER 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL HEATER	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL PUMP 1	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL PUMP 2	5.1110	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
STG TRANSFORMER SEE	5.1110	5.8410	INDOOR
STG TRANSFORMER SEE PACKAGE	5.1110	5.8410	INDOOR
STG VT SURGE CUBICLE	5.1110	5.8410	INDOOR
COMMON GT WATER WASH SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - UNIT 1	5.1120	5.8320	INDOOR
GT1 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT1 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT1 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT1 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT1 ENCLOSURE	5.1120	5.8320	INDOOR
GT1 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT1 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT1 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT1 GENERATOR	5.1120	5.8320	INDOOR
GT1 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT1 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT1 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT1 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT1 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT1 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT1 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT1 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT1 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT1 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT1 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT1 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT1 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT1 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - UNIT 2	5.1120	5.8320	INDOOR
GT2 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT2 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT2 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT2 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT2 ENCLOSURE	5.1120	5.8320	INDOOR
GT2 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT2 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT2 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT2 GENERATOR	5.1120	5.8320	INDOOR
GT2 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT2 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT2 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT2 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT2 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT2 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT2 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT2 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT2 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT2 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT2 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT2 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT2 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT2 WATER INJECTION SKID	5.1120	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
HRSG1	5.1215	5.8320	INDOOR
HRSG1 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG1 AIG BLOWER B	5.1215	5.8320	INDOOR
HRSG1 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG1 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG1 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG1 COOLING BLOWER B	5.1215	5.8320	INDOOR
HRSG1 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG1 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG1 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
HRSG2	5.1215	5.8320	INDOOR
HRSG2 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG2 AIG BLOWER B	5.1215	5.8320	INDOOR
HRSG2 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG2 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG2 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG2 COOLING BLOWER B	5.1215	5.8320	INDOOR
HRSG2 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG2 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG2 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
BOILER FEEDWATER PUMP 1A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 1B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 1A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 1B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 2A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 2B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 2A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 2B	5.2110	5.8320	INDOOR
AUXILIARY COOLING WATER PUMP	5.2120	5.8320	OUTDOOR
CIRCULATING WATER PUMP A	5.2120	5.8320	OUTDOOR
CIRCULATING WATER PUMP B	5.2120	5.8320	OUTDOOR
CONDENSATE PUMP A	5.2130	5.8320	INDOOR
CONDENSATE PUMP B	5.2130	5.8320	INDOOR
CONDENSATE PUMP C	5.2130	5.8320	INDOOR
DIESEL FIRE PUMP	5.2150	5.8320	INDOOR
ELECTRIC FIRE PUMP	5.2150	5.8320	INDOOR
JOCKEY FIRE PUMP AND ENCLOSURE FEED	5.2150	5.8320	INDOOR
WASTEWATER SUMP PUMP A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP B	5.2180	5.8320	OUTDOOR
UNIT 1 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 1 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
UNIT 2 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 2 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
CLARIFIED WATER TRANSFER PUMP A	5.2180	5.8320	INDOOR
CLARIFIED WATER TRANSFER PUMP B	5.2180	5.8320	INDOOR
CLEARWELL SUMP PUMP A	5.2180	5.8320	OUTDOOR
CLEARWELL SUMP PUMP B	5.2180	5.8320	OUTDOOR
CLEARWELL SUMP PUMP C	5.2180	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL TRANSFER PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL TRANSFER PUMP A	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
DEMINERALIZED WATER PUMP A	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP B	5.2190	5.8320	INDOOR
SERVICE WATER PUMP A	5.2190	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
SERVICE WATER PUMP B	5.2190	5.8320	INDOOR
POWERHOUSE SANITARY LIFT STATION	5.2191	5.8220	OUTDOOR
WAREHOUSE/ADMIN SANITARY LIFT STATION	5.2191	5.8220	OUTDOOR
COOLING TOWER	5.2210	5.8320	OUTDOOR
COOLING TOWER FAN 1	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 10	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 11	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 12	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 2	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 3	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 4	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 5	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 6	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 7	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 8	5.2210	5.2210	OUTDOOR
COOLING TOWER FAN 9	5.2210	5.2210	OUTDOOR
CONDENSER	5.2220	5.8320	INDOOR
CONDENSER VACUUM PUMP A	5.2220	5.8320	INDOOR
CONDENSER VACUUM PUMP A RECIRC PUMP	5.2220	5.8320	INDOOR
CONDENSER VACUUM PUMP B	5.2220	5.8320	INDOOR
CONDENSER VACUUM PUMP B RECIRC PUMP	5.2220	5.8320	INDOOR
CLOSED COOLING WATER HEAT EXCHANGER A	5.2280	5.8320	INDOOR
CLOSED COOLING WATER HEAT EXCHANGER B	5.2280	5.8320	INDOOR
POTABLE WATER WATER HEATER TANKS	5.2490	5.8320	INDOOR
AIR COMPRESSOR A	5.2710	5.8320	INDOOR
AIR COMPRESSOR B	5.2710	5.8320	INDOOR
AIR COMPRESSOR C	5.2710	5.8320	INDOOR
AIR DRYER A	5.2710	5.8320	INDOOR
AIR DRYER B	5.2710	5.8320	INDOOR
AQUEOUS AMMONIA STORAGE TANK	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA UNLOADING SKID	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP A	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP B	5.2750	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER A	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER B	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER A	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER B	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER C	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR SKID	5.2762	5.8320	OUTDOOR
DRAINS TANK	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR	5.2762	5.8320	OUTDOOR
FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
AUXILIARY BOILER	5.2910	5.8320	INDOOR
AUXILIARY BOILER BLOWDOWN TANK	5.2910	5.8320	INDOOR
AUXILIARY BOILER DEAERATOR	5.2910	5.8320	INDOOR
AUXILIARY BOILER FD FAN	5.2910	5.8320	INDOOR
AUXILIARY BOILER FEEDWATER PUMP A	5.2910	5.8320	INDOOR
AUXILIARY BOILER FEEDWATER PUMP B	5.2910	5.8320	INDOOR
AUXILIARY STEAM ELECTRIC SUPERHEATER	5.2910	5.8320	INDOOR
WASH WATER DRAINS TANK	5.2940	5.8320	OUTDOOR
OIL WATER SEPARATOR	5.2940	5.8220	OUTDOOR
DRY AIR RECEIVER	5.2980	5.8320	INDOOR
WET AIR RECEIVER	5.2980	5.8320	INDOOR
PULSE AIR RECEIVERS	5.2980	5.8320	INDOOR
CLOSED COOLING WATER HEAD TANK	5.2980	5.8320	OUTDOOR
CLOSED COOLING WATER CHEMICAL POT FEEDER	5.2980	5.8320	INDOOR
STG ATM DRAINS TANK	5.2980	5.8320	INDOOR
COOLING TOWER CHEMICAL FEED ENCLOSURE	5.3120	5.8320	OUTDOOR
CIRCULATING WATER SAMPLE PANEL	5.3120	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
COOLING TOWER ACID PUMP SKID	5.3120	5.8320	INDOOR
COOLING TOWER ACID PUMP A	5.3120	5.8320	INDOOR
COOLING TOWER ACID PUMP B	5.3120	5.8320	INDOOR
COOLING TOWER CORROSION INHIBITOR PUMP SKID	5.3120	5.8320	INDOOR
COOLING TOWER CORROSION INHIBITOR PUMP A	5.3120	5.8320	INDOOR
COOLING TOWER CORROSION INHIBITOR PUMP B	5.3120	5.8320	INDOOR
COOLING TOWER SODIUM BISULFITE PUMP SKID	5.3120	5.8320	INDOOR
COOLING TOWER SODIUM BISULFITE PUMP A	5.3120	5.8320	INDOOR
COOLING TOWER SODIUM BISULFITE PUMP B	5.3120	5.8320	INDOOR
COOLING TOWER SCALE INHIBITOR PUMP SKID	5.3120	5.8320	INDOOR
COOLING TOWER SCALE INHIBITOR PUMP A	5.3120	5.8320	INDOOR
COOLING TOWER SCALE INHIBITOR PUMP B	5.3120	5.8320	INDOOR
COOLING TOWER SODIUM HYPOCHLORITE PUMP SKID	5.3120	5.8320	INDOOR
COOLING TOWER SODIUM HYPOCHLORITE PUMP A	5.3120	5.8320	INDOOR
COOLING TOWER SODIUM HYPOCHLORITE PUMP B	5.3120	5.8320	INDOOR
COOLING TOWER ACID STORAGE TANK	5.3120	5.8320	OUTDOOR
COOLING TOWER SODIUM HYPOCHLORITE STORAGE TANK	5.3120	5.8320	OUTDOOR
AMMONIA CHEMICAL SKID	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP A	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP B	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED SKID	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP A	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP B	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEMICAL SKID	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEM FEED PUMP A	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEM FEED PUMP B	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE SHELTER HOUSE	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE TRANSFER PUMP A	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE TRANSFER PUMP B	5.3210	5.8320	INDOOR
HRSG 1 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
HRSG 2 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
AUTOMATIC BACKWASH STRAINER & OIL/GREASE CARTRIDGE FILTER SKID	5.3210	5.8320	INDOOR
UF FILTER TRAIN A	5.3210	5.8320	INDOOR
UF FILTER TRAIN B	5.3210	5.8320	INDOOR
ULTRAFILTRATION (UF) BACKWASH PUMP SKID	5.3210	5.8320	INDOOR
UF CHEMICAL ENHANCED BACKWASH (CEB) SODIUM HYDROXIDE FEED SKID	5.3210	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE FEED SKID	5.3210	5.8320	INDOOR
UF CEB CITRIC ACID FEED SKID	5.3210	5.8320	INDOOR
UF BACKWASH TANK	5.3210	5.8320	INDOOR
CALCITE FILTERS	5.3210	5.8320	INDOOR
MIXED BED VALVE MANIFOLD	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL A	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL B	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL C	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL D	5.3220	5.8320	INDOOR
REVERSE OSMOSIS (RO) TRAIN A	5.3220	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
1ST PASS RO FILTER A	5.3220	5.8320	INDOOR
1ST PASS RO BOOSTER PUMP A	5.3220	5.8320	INDOOR
2ND PASS RO FILTER A	5.3220	5.8320	INDOOR
2ND PASS RO BOOSTER PUMP A	5.3220	5.8320	INDOOR
RO CARTRIDGE FILTER A	5.3220	5.8320	INDOOR
REVERSE OSMOSIS (RO) TRAIN B	5.3220	5.8320	INDOOR
1ST PASS RO FILTER B	5.3220	5.8320	INDOOR
1ST PASS RO BOOSTER PUMP B	5.3220	5.8320	INDOOR
2ND PASS RO FILTER B	5.3220	5.8320	INDOOR
2ND PASS RO BOOSTER PUMP B	5.3220	5.8320	INDOOR
RO CARTRIDGE FILTER B	5.3220	5.8320	INDOOR
CLEAN IN PLACE (CIP) SKID	5.3220	5.8320	INDOOR
UF/RO CIP CARTRIDGE FILTER	5.3220	5.8320	INDOOR
UF/RO CIP TANK	5.3220	5.8320	INDOOR
UF/RO CIP TANK HEATER	5.3220	5.8320	INDOOR
UF/RO CIP FORWARDING PUMP	5.3220	5.8320	INDOOR
RO RINSE PUMP SKID	5.3220	5.8320	INDOOR
RO SODIUM BISULFITE FEED SKID	5.3220	5.8320	INDOOR
RO ANTI-SCALANT FEED SKID	5.3220	5.8320	INDOOR
RO SODIUM HYDROXIDE FEED SKID	5.3220	5.8320	INDOOR
RO ACID FEED SKID	5.3220	5.8320	INDOOR
SAMPLE ANALYSIS COOLER	5.3310	5.8320	INDOOR
SAMPLE ANALYSIS PANEL	5.3310	5.8320	INDOOR
HIGH RATE CONTACT CLARIFIER A	5.3410	5.8320	INDOOR
HIGH RATE CONTACT CLARIFIER B	5.3410	5.8320	INDOOR
SLUDGE TANK/THICKENER A	5.3410	5.8320	OUTDOOR
SLUDGE TANK/THICKENER A MIXER	5.3410	5.8320	OUTDOOR
SLUDGE TANK/THICKENER B	5.3410	5.8320	OUTDOOR
SLUDGE TANK/THICKENER B MIXER	5.3410	5.8320	OUTDOOR
CLARIFIER A SLUDGE PUMP SKID	5.3410	5.8320	INDOOR
CLARIFIER A SLUDGE PUMP A	5.3410	5.8320	INDOOR
CLARIFIER A SLUDGE PUMP B	5.3410	5.8320	INDOOR
CLARIFIER A SLUDGE PUMP C	5.3410	5.8320	INDOOR
CLARIFIER B SLUDGE PUMP SKID	5.3410	5.8320	INDOOR
CLARIFIER B SLUDGE PUMP A	5.3410	5.8320	INDOOR
CLARIFIER B SLUDGE PUMP B	5.3410	5.8320	INDOOR
CLARIFIER B SLUDGE PUMP C	5.3410	5.8320	INDOOR
FILTER PRESS CLOTH WASH TANK	5.3410	5.8320	INDOOR
FILTER PRESS CLOTH WASH PUMP SKID	5.3410	5.8320	INDOOR
FILTER PRESS CLOTH WASH PUMP A	5.3410	5.8320	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
FILTER PRESS CLOTH WASH PUMP B	5.3410	5.8320	INDOOR
FILTER PRESS FEED PUMP SKID	5.3410	5.8320	INDOOR
FILTER PRESS FEED PUMP A	5.3410	5.8320	INDOOR
FILTER PRESS FEED PUMP B	5.3410	5.8320	INDOOR
FILTER PRESS FEED PUMP C	5.3410	5.8320	INDOOR
FILTER PRESS A	5.3410	5.8320	INDOOR
FILTER PRESS B	5.3410	5.8320	INDOOR
POLYMER TOTE	OWNER	5.8320	INDOOR
CLARIFIER POLYMER TOTE MIXER	5.3410	5.8320	INDOOR
CLARIFIER POLYMER FEED SKID	5.3410	5.8320	INDOOR
CLARIFIER POLYMER FEED PUMP A	5.3410	5.8320	INDOOR
CLARIFIER POLYMER FEED PUMP B	5.3410	5.8320	INDOOR
CLARIFIER POLYMER BLENDING SYSTEM	5.3410	5.8320	INDOOR
CLARIFIER COAGULANT TOTE	OWNER	5.8320	INDOOR
CLARIFIER COAGULANT FEED SKID	5.3410	5.8320	INDOOR
CLARIFIER COAGULANT FEED PUMP A	5.3410	5.8320	INDOOR
CLARIFIER COAGULANT FEED PUMP B	5.3410	5.8320	INDOOR
GTG BUILDING CRANE	5.4210	5.8320	INDOOR
STG BUILDING CRANE	5.4210	5.8320	INDOOR
GTG1 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG2 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
STG GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG1 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG2 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG1 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG2 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
STG GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG1 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG2 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STG ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STANDBY DIESEL GENERATOR	5.5240	5.8410	OUTDOOR
4160V SWGR A	5.5310	5.8410	INDOOR
4160V SWGR B	5.5310	5.8410	INDOOR
ACC MCC 1 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 2 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 3 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 4 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 5 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 6 (ACC PCM)	5.5310	5.8410	INDOOR
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP MCC 1	5.5310	5.8410	INDOOR
BOP MCC 2	5.5310	5.8410	INDOOR
BOP MCC 3	5.5310	5.8410	INDOOR
BOP MCC 4	5.5310	5.8410	INDOOR
ESS 480V SWGR A	5.5310	5.8410	INDOOR
ESS STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR B	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR C	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR D	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
STG 480V SWGR	5.5310	5.8410	INDOOR
STG STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
STG 480V SWGR	5.5310	5.8410	INDOOR
STG STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
WT 480V SWGR A	5.5310	5.8410	INDOOR

157787 - COOPER 2x1 CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
WT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
WT 480V SWGR B	5.5310	5.8410	INDOOR
WT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 MCC	5.5310	5.8410	INDOOR
GTG2 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG2 MCC	5.5310	5.8410	INDOOR
HRSG1 MCC	5.5310	5.8410	INDOOR
HRSG2 MCC	5.5310	5.8410	INDOOR
STG MCC	5.5310	5.8410	INDOOR
UPS AND 125VDC SYSTEM	5.5310	5.8410	INDOOR
WATER TREATMENT MCC	5.5310	5.8410	INDOOR
PLANT COMMUNICATIONS EQUIPMENT (GAITRONICS)	5.5670	5.8410	INDOOR
DCS (BOP)	5.6110	5.8410	INDOOR
FUEL GAS CHROMATOGRAPH	5.6211	5.8320	OUTDOOR
POWER BLOCK BUILDING AIR HANDLING UNITS (AHU)	5.8340	5.8340	INDOOR
POWER BLOCK BUILDING FANS	5.8340	5.8340	OUTDOOR
POWER BLOCK BUILDING GAS UNIT HEATERS (GUH)	5.8340	5.8340	INDOOR
POWER BLOCK BUILDING LOUVERS	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATERS (EUH)	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING FANS	5.8340	5.8340	OUTDOOR
WATER TREATMENT BUILDING LOUVERS	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.8340	5.8340	OUTDOOR
COOLING TOWER CHEMICAL FEED ENCLOSURE ELECTRIC UNIT HEATERS (EUH)	5.3120	5.3120	INDOOR
COOLING TOWER CHEMICAL FEED ENCLOSURE FANS	5.3120	5.3120	OUTDOOR
COOLING TOWER CHEMICAL FEED ENCLOSURE LOUVERS	5.3120	5.3120	INDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNITS (VAV)	5.8340	5.8340	INDOOR
ADMINISTRATION BUILDING FAN	5.8340	5.8340	OUTDOOR
ADMINISTRATION BUILDING ROOF TOP UNITS (RTU)	5.8340	5.8340	OUTDOOR
MAINTENANCE SHOP FAN	5.8340	5.8340	OUTDOOR
MAINTENANCE SHOP GAS UNIT HEATER (GUH)	5.8340	5.8340	INDOOR
MAINTENANCE SHOP LOUVER	5.8340	5.8340	INDOOR
MAINTENANCE SHOP/WAREHOUSE MAKE-UP AIR UNIT (MAU)	5.8340	5.8340	OUTDOOR
WAREHOUSE FAN	5.8340	5.8340	OUTDOOR
WAREHOUSE GAS UNIT HEATER (GUH)	5.8340	5.8340	INDOOR
WAREHOUSE LOUVER	5.8340	5.8340	INDOOR
GT1 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT2 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
STG GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
DEMINERALIZED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK HEATERS	5.8570	5.8570	OUTDOOR
CLARIFIED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK A	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK B	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK HEATER	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK HEATER	5.8570	5.8570	OUTDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AMMONIA TOTE	OWNER	5.8320	INDOOR
AUXILIARY BOILER CHEMICAL TOTE	OWNER	5.8320	INDOOR
FUEL GAS DEWPOINT HEATER A	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER B	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER C	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID	5.2762	5.8320	OUTDOOR
NITROGEN BOTTLE RACK	OWNER	5.8320	OUTDOOR
OFF-SITE SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
ON-SITE SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
OXYGEN SCAVENGER TOTE	OWNER	5.8320	INDOOR
RO ANTI-SCALANT TOTE	OWNER	5.8320	INDOOR
RO SODIUM BISULFITE TOTE	OWNER	5.8320	INDOOR
RO SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
RO SULFURIC ACID TOTE	OWNER	5.8320	INDOOR
UF CEB CITRIC ACID TOTE	OWNER	5.8320	INDOOR
UF CEB SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
MIXED BED VALVE MANIFOLD	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL A	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL B	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL C	5.3220	5.8320	INDOOR
MIXED BED DEMINERALIZATION VESSEL D	5.3220	5.8320	INDOOR
UNIT 1 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
UNIT 2 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
UNIT 3 PHOSPHATE TOTE	OWNER	5.8320	INDOOR
PLANT COMMUNICATIONS EQUIPMENT (GAITRONICS)	5.5670	5.8410	INDOOR
DCS (BOP)	5.6110	5.8410	INDOOR
COMMON GT WATER WASH SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - UNIT 1	5.1120	5.8320	INDOOR
GT1 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT1 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT1 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT1 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT1 ENCLOSURE	5.1120	5.8320	INDOOR
GT1 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT1 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT1 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT1 GENERATOR	5.1120	5.8320	INDOOR
GT1 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT1 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT1 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT1 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT1 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT1 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT1 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT1 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT1 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT1 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT1 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT1 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT1 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT1 WATER INJECTION SKID	5.1120	5.8320	INDOOR
HRSG1	5.1215	5.8320	INDOOR
HRSG1 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG1 AIG BLOWER B	5.1215	5.8320	INDOOR
HRSG1 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG1 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG1 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG1 COOLING BLOWER B	5.1215	5.8320	INDOOR
HRSG1 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG1 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG1 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
GAS TURBINE GENERATOR - UNIT 2	5.1120	5.8320	INDOOR
GT2 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT2 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT2 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT2 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT2 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT2 ENCLOSURE	5.1120	5.8320	INDOOR
GT2 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT2 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT2 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT2 GENERATOR	5.1120	5.8320	INDOOR
GT2 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT2 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT2 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT2 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT2 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT2 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT2 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT2 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT2 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT2 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT2 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT2 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT2 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT2 WATER INJECTION SKID	5.1120	5.8320	INDOOR
HRSG2	5.1215	5.8320	INDOOR
HRSG2 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG2 AIG BLOWER B	5.1215	5.8320	INDOOR
HRSG2 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG2 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG2 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG2 COOLING BLOWER B	5.1215	5.8320	INDOOR
HRSG2 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG2 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG2 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
GAS TURBINE GENERATOR - UNIT 3	5.1120	5.8320	INDOOR
GT3 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT3 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT3 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT3 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT3 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT3 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT3 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT3 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT3 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT3 ENCLOSURE	5.1120	5.8320	INDOOR
GT3 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT3 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT3 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT3 GENERATOR	5.1120	5.8320	INDOOR
GT3 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT3 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT3 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT3 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT3 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT3 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT3 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT3 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT3 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT3 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT3 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT3 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT3 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT3 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT3 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT3 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT3 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT3 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT3 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT3 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT3 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT3 WATER INJECTION SKID	5.1120	5.8320	INDOOR
HRSG3	5.1215	5.8320	INDOOR
HRSG3 AIG BLOWER A	5.1215	5.8320	INDOOR
HRSG3 AIG BLOWER B	5.1215	5.8320	INDOOR
HRSG3 BLOWDOWN TANK	5.1215	5.8320	INDOOR
HRSG3 CONDENSATE RECIRCULATION PUMP	5.1215	5.8320	INDOOR
HRSG3 COOLING BLOWER A	5.1215	5.8320	INDOOR
HRSG3 COOLING BLOWER B	5.1215	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
HRSG3 EXHAUST STACK	5.1215	5.8320	INDOOR
HRSG3 CEMS SHELTER ANALYZER CABINET	5.1215	5.8320	OUTDOOR
GTG3 CEMS ANALYZER CABINET	5.1215	5.8410	INDOOR
STEAM TURBINE GENERATOR (STG)	5.1110	5.8320	INDOOR
STG HOTBOX	5.1110	5.8320	INDOOR
STG HP/IP TURBINE	5.1110	5.8320	INDOOR
STG LP TURBINE	5.1110	5.8320	INDOOR
STG BEARING LIFT OIL FILTER 1	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL FILTER 2	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL PUMP 1	5.1110	5.1110	INDOOR
STG BEARING LIFT OIL PUMP 2	5.1110	5.1110	INDOOR
STG EMERGENCY LUBE OIL PUMP	5.1110	5.1110	INDOOR
STG LUBE OIL COOLER 1	5.1110	5.8320	INDOOR
STG LUBE OIL COOLER 2	5.1110	5.8320	INDOOR
STG LUBE OIL FILTER 1	5.1110	5.8320	INDOOR
STG LUBE OIL FILTER 2	5.1110	5.8320	INDOOR
STG LUBE OIL MODULE/TANK	5.1110	5.8320	INDOOR
STG LUBE OIL PUMP 1	5.1110	5.8320	INDOOR
STG LUBE OIL PUMP 2	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUST OIL SEPARATOR	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUSTER 1	5.1110	5.8320	INDOOR
STG LUBE OIL VAPOR EXHAUSTER 2	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT HEATER	5.1110	5.8320	INDOOR
STG OIL PURIFICATION UNIT PUMP	5.1110	5.8320	INDOOR
STG GLAND STEAM CONDENSER	5.1110	5.8320	INDOOR
STG GLAND STEAM EXHAUSTER 1	5.1110	5.1110	INDOOR
STG GLAND STEAM EXHAUSTER 2	5.1110	5.1110	INDOOR
STG HYDRAULIC OIL UNIT/TANK	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING CIRCULATION PUMP 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING CIRCULATION PUMP 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING FAN 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL COOLING FAN 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL FILTER 1	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL FILTER 2	5.1110	5.1110	INDOOR
STG HYDRAULIC/CONTROL OIL HEATER	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL PUMP 1	5.1110	5.8320	INDOOR
STG HYDRAULIC/CONTROL OIL PUMP 2	5.1110	5.8320	INDOOR
STG TRANSFORMER SEE	5.1110	5.8410	INDOOR
STG TRANSFORMER SEE PACKAGE	5.1110	5.8410	INDOOR
STG VT SURGE CUBICLE	5.1110	5.8410	INDOOR
BOILER FEEDWATER PUMP 1A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 1B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 1A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 1B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 2A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 2B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 2A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 2B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 3A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP 3B	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 3A	5.2110	5.8320	INDOOR
BOILER FEEDWATER PUMP LUBE OIL PUMP 3B	5.2110	5.8320	INDOOR
CONDENSATE PUMP A	5.2130	5.8320	INDOOR
CONDENSATE PUMP B	5.2130	5.8320	INDOOR
CONDENSATE PUMP C	5.2130	5.8320	INDOOR
DIESEL FIRE PUMP	5.2150	5.8320	INDOOR
ELECTRIC FIRE PUMP	5.2150	5.8320	INDOOR
JOCKEY FIRE PUMP AND ENCLOSURE FEED	5.2150	5.8320	INDOOR
FUEL OIL FORWARDING PUMP A	5.2190	5.8320	OUTDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
FUEL OIL FORWARDING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP D	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL HEATER A	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER B	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER C	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER D	5.2762	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 1A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 1B	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 2A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 2B	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 3A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 3B	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 4	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP 5	5.2180	5.8320	OUTDOOR
DEEP WELL	5.8160	5.8160	OUTDOOR
WELL PUMP A	5.8160	5.8160	OUTDOOR
WELL PUMP B	5.8160	5.8160	OUTDOOR
UNIT 1 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 1 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
UNIT 2 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 2 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
UNIT 3 HRSG BLOWDOWN SUMP PUMP A	5.2180	5.8320	OUTDOOR
UNIT 3 HRSG BLOWDOWN SUMP PUMP B	5.2180	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP C	5.2190	5.8320	OUTDOOR
CLOSED COOLING WATER PUMP D	5.2190	5.8320	OUTDOOR
DEMINERALIZED WATER PUMP A	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP B	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP C	5.2190	5.8320	INDOOR
SERVICE WATER PUMP A	5.2190	5.8320	INDOOR
SERVICE WATER PUMP B	5.2190	5.8320	INDOOR
AIR-COOLED HEAT EXCHANGER (ACHE)	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 1	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 2	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 3	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 4	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 5	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 6	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 7	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 8	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 9	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 10	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 11	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 12	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 13	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 14	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 15	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 16	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 17	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 18	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 19	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 20	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 21	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 22	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 23	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 24	5.2215	5.8320	OUTDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 25	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 26	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 27	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 28	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 29	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 30	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 31	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 32	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 33	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 34	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 35	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 36	5.2215	5.8320	OUTDOOR
AIR-COOLED CONDENSER (ACC)	5.2230	5.8320	OUTDOOR
ACC DUCT DRAIN POT PUMP A	5.2230	5.8320	OUTDOOR
ACC DUCT DRAIN POT PUMP B	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 1 COOLING FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 7	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 8	5.2230	5.8320	OUTDOOR
ACC STREET 1 FAN DRIVE BRAKE 9	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 2 COOLING FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
ACC STREET 2 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 7	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 8	5.2230	5.8320	OUTDOOR
ACC STREET 2 FAN DRIVE BRAKE 9	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 3 COOLING FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 7	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 8	5.2230	5.8320	OUTDOOR
ACC STREET 3 FAN DRIVE BRAKE 9	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 4 COOLING FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 7	5.2230	5.8320	OUTDOOR
ACC STREET 4 FAN DRIVE BRAKE 8	5.2230	5.8320	OUTDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
ACC STREET 4 FAN DRIVE BRAKE 9	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 5 COOLING FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 7	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 8	5.2230	5.8320	OUTDOOR
ACC STREET 5 FAN DRIVE BRAKE 9	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 6 COOLING FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 1	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 2	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 3	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 4	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 5	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 6	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 7	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 8	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN 9	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 1	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 2	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 3	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 4	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 5	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 6	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 7	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 8	5.2230	5.8320	OUTDOOR
ACC STREET 6 FAN DRIVE BRAKE 9	5.2230	5.8320	OUTDOOR
CONDENSATE STORAGE TANK	5.2230	5.8320	INDOOR
DEAERATOR EJECTOR	5.2230	5.8320	INDOOR
ACC CLEANING WATER PUMP SKID	5.2230	5.8320	OUTDOOR
LIQUID RING VACUUM PUMP (LRVP) A	5.2230	5.8320	INDOOR
LRVP PLATE AND FRAME HEAT EXCHANGER A	5.2230	5.8320	INDOOR
LRVP RECIRCULATION PUMP A	5.2230	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
LRVP SEPARATOR TANK A	5.2230	5.8320	INDOOR
LIQUID RING VACUUM PUMP (LRVP) B	5.2230	5.8320	INDOOR
LRVP PLATE AND FRAME HEAT EXCHANGER B	5.2230	5.8320	INDOOR
LRVP RECIRCULATION PUMP B	5.2230	5.8320	INDOOR
LRVP SEPARATOR TANK B	5.2230	5.8320	INDOOR
POTABLE WATER WATER HEATER TANKS	5.2490	5.8320	INDOOR
AIR COMPRESSOR A	5.2710	5.8320	INDOOR
AIR COMPRESSOR B	5.2710	5.8320	INDOOR
AIR COMPRESSOR C	5.2710	5.8320	INDOOR
AIR DRYER A	5.2710	5.8320	INDOOR
AIR DRYER B	5.2710	5.8320	INDOOR
DRY AIR RECEIVER	5.2980	5.8320	INDOOR
WET AIR RECEIVER	5.2980	5.8320	INDOOR
PULSE AIR RECEIVERS	5.2980	5.8320	INDOOR
AQUEOUS AMMONIA STORAGE TANK	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA UNLOADING SKID	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP A	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP B	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP C	5.2750	5.8320	OUTDOOR
AQUEOUS AMMONIA FORWARDING PUMP D	5.2750	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR SKID	5.2762	5.8320	OUTDOOR
DRAINS TANK	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR	5.2762	5.8320	OUTDOOR
FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
FUEL GAS CHROMATOGRAPH	5.6211	5.8320	OUTDOOR
AUXILIARY BOILER	5.2910	5.8320	INDOOR
AUXILIARY BOILER BLOWDOWN TANK	5.2910	5.8320	INDOOR
AUXILIARY BOILER DEAERATOR	5.2910	5.8320	INDOOR
AUXILIARY BOILER FD FAN	5.2910	5.8320	INDOOR
AUXILIARY BOILER FEEDWATER PUMP A	5.2910	5.8320	INDOOR
AUXILIARY BOILER FEEDWATER PUMP B	5.2910	5.8320	INDOOR
AUXILIARY STEAM ELECTRIC SUPERHEATER	5.2910	5.8320	INDOOR
WASH WATER DRAINS TANK 1	5.2940	5.8320	OUTDOOR
WASH WATER DRAINS TANK 2	5.2940	5.8320	OUTDOOR
WASH WATER DRAINS TANK 3	5.2940	5.8320	OUTDOOR
OIL WATER SEPARATOR	5.2940	5.8220	OUTDOOR
POWERHOUSE SANITARY LIFT STATION	5.2191	5.8220	OUTDOOR
WAREHOUSE/ADMIN SANITARY LIFT STATION	5.2191	5.8220	OUTDOOR
SANITARY TREAMENT FACILITY	5.3430	5.8320	OUTDOOR
DEMINERALIZED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK HEATERS	5.8570	5.8570	OUTDOOR
RAW WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK A	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK B	5.8570	5.8570	OUTDOOR
CLOSED COOLING WATER HEAD TANK	5.2980	5.8320	OUTDOOR
STG FLASH TANK	5.2980	5.8320	INDOOR
STG ATM DRAINS TANK	5.2980	5.8320	INDOOR
AMMONIA CHEMICAL SKID	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP A	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP B	5.3210	5.8320	INDOOR
AMMONIA FEED PUMP C	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED SKID	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP A	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP B	5.3210	5.8320	INDOOR
OXYGEN SCAVENGER FEED PUMP C	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEMICAL SKID	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEM FEED PUMP A	5.3210	5.8320	INDOOR
AUXILIARY BOILER CHEM FEED PUMP B	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE SHELTER HOUSE	5.3210	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
SODIUM HYPOCHLORITE TRANSFER PUMP A	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE TRANSFER PUMP B	5.3210	5.8320	INDOOR
HRSG 1 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
HRSG 2 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
HRSG 3 HP/IP PHOSPHATE SKID	5.3210	5.8320	INDOOR
REVERSE OSMOSIS (RO) TRAIN A	5.3220	5.8320	INDOOR
1ST PASS RO FILTER A	5.3220	5.8320	INDOOR
1ST PASS RO BOOSTER PUMP A	5.3220	5.8320	INDOOR
2ND PASS RO FILTER A	5.3220	5.8320	INDOOR
2ND PASS RO BOOSTER PUMP A	5.3220	5.8320	INDOOR
RO CARTRIDGE FILTER A	5.3220	5.8320	INDOOR
REVERSE OSMOSIS (RO) TRAIN B	5.3220	5.8320	INDOOR
1ST PASS RO FILTER B	5.3220	5.8320	INDOOR
1ST PASS RO BOOSTER PUMP B	5.3220	5.8320	INDOOR
2ND PASS RO FILTER B	5.3220	5.8320	INDOOR
2ND PASS RO BOOSTER PUMP B	5.3220	5.8320	INDOOR
RO CARTRIDGE FILTER B	5.3220	5.8320	INDOOR
CLEAN IN PLACE (CIP) SKID	5.3220	5.8320	INDOOR
UF/RO CIP CARTRIDGE FILTER	5.3220	5.8320	INDOOR
UF/RO CIP TANK	5.3220	5.8320	INDOOR
UF/RO CIP TANK HEATER	5.3220	5.8320	INDOOR
UF/RO CIP FORWARDING PUMP	5.3220	5.8320	INDOOR
RO RINSE PUMP SKID	5.3220	5.8320	INDOOR
RO SODIUM BISULFITE FEED SKID	5.3220	5.8320	INDOOR
RO ANTI-SCALANT FEED SKID	5.3220	5.8320	INDOOR
RO SODIUM HYDROXIDE FEED SKID	5.3220	5.8320	INDOOR
RO ACID FEED SKID	5.3220	5.8320	INDOOR
AUTOMATIC BACKWASH STRAINER & OIL/GREASE CARTRIDGE FILTER SKID	5.3210	5.8320	INDOOR
UF FILTER TRAIN A	5.3210	5.8320	INDOOR
UF FILTER TRAIN B	5.3210	5.8320	INDOOR
ULTRAFILTRATION (UF) BACKWASH PUMP SKID	5.3210	5.8320	INDOOR
UF CHEMICAL ENHANCED BACKWASH (CEB) SODIUM HYDROXIDE FEED SKID	5.3210	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE FEED SKID	5.3210	5.8320	INDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
UF CEB CITRIC ACID FEED SKID	5.3210	5.8320	INDOOR
UF BACKWASH TANK	5.3210	5.8320	INDOOR
CALCITE FILTERS	5.3210	5.8320	INDOOR
SAMPLE ANALYSIS COOLER	5.3310	5.8320	INDOOR
SAMPLE ANALYSIS PANEL	5.3310	5.8320	INDOOR
GTG BUILDING CRANE	5.4210	5.8320	INDOOR
STG BUILDING CRANE	5.4210	5.8320	INDOOR
POWER BLOCK BUILDING AIR HANDLING UNITS (AHU)	5.8340	5.8340	INDOOR
POWER BLOCK BUILDING FANS	5.8340	5.8340	OUTDOOR
POWER BLOCK BUILDING GAS UNIT HEATERS (GUH)	5.8340	5.8340	INDOOR
POWER BLOCK BUILDING LOUVERS	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATERS (EUH)	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING FANS	5.8340	5.8340	OUTDOOR
WATER TREATMENT BUILDING LOUVERS	5.8340	5.8340	INDOOR
WATER TREATMENT BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.8340	5.8340	OUTDOOR
ADMINISTRATION BUILDING AIR TERMINAL UNITS (VAV)	5.8340	5.8340	INDOOR
ADMINISTRATION BUILDING FAN	5.8340	5.8340	OUTDOOR
ADMINISTRATION BUILDING ROOF TOP UNITS (RTU)	5.8340	5.8340	OUTDOOR
MAINTENANCE SHOP FAN	5.8340	5.8340	OUTDOOR
MAINTENANCE SHOP GAS UNIT HEATER (GUH)	5.8340	5.8340	INDOOR
MAINTENANCE SHOP LOUVER	5.8340	5.8340	INDOOR
MAINTENANCE SHOP/WAREHOUSE MAKE-UP AIR UNIT (MAU)	5.8340	5.8340	OUTDOOR
WAREHOUSE FAN	5.8340	5.8340	OUTDOOR
WAREHOUSE GAS UNIT HEATER (GUH)	5.8340	5.8340	INDOOR
WAREHOUSE LOUVER	5.8340	5.8340	INDOOR
GTG1 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG1 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG2 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG2 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG3 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG3 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
STG GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG1 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG2 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG3 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
STG GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG1 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG2 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG3 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STG ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STANDBY DIESEL GENERATOR	5.5240	5.8410	OUTDOOR
4160V SWGR A	5.5310	5.8410	INDOOR
4160V SWGR B	5.5310	5.8410	INDOOR
4160V SWGR C	5.5310	5.8410	INDOOR
ACC MCC 1 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 2 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 3 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 4 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 5 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 6 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 7 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 8 (ACC PCM)	5.5310	5.8410	INDOOR
ACC MCC 9 (ACC PCM)	5.5310	5.8410	INDOOR
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR

157787 - TYGARTS CREEK CCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
ACC STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP MCC 1	5.5310	5.8410	INDOOR
BOP MCC 2	5.5310	5.8410	INDOOR
BOP MCC 3	5.5310	5.8410	INDOOR
BOP MCC 4	5.5310	5.8410	INDOOR
BOP MCC 5	5.5310	5.8410	INDOOR
BOP MCC 6	5.5310	5.8410	INDOOR
ESS 480V SWGR A	5.5310	5.8410	INDOOR
ESS STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR B	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR C	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR D	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP 480V SWGR E	5.5310	5.8410	INDOOR
BOP STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
STG 480V SWGR	5.5310	5.8410	INDOOR
STG STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
STG 480V SWGR	5.5310	5.8410	INDOOR
STG STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
WT 480V SWGR A	5.5310	5.8410	INDOOR
WT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
WT 480V SWGR B	5.5310	5.8410	INDOOR
WT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 MCC	5.5310	5.8410	INDOOR
GTG2 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG2 MCC	5.5310	5.8410	INDOOR
GTG3 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG3 MCC	5.5310	5.8410	INDOOR
HRSG1 MCC	5.5310	5.8410	INDOOR
HRSG2 MCC	5.5310	5.8410	INDOOR
HRSG3 MCC	5.5310	5.8410	INDOOR
STG MCC	5.5310	5.8410	INDOOR
UPS AND 125VDC SYSTEM	5.5310	5.8410	INDOOR
WATER TREATMENT MCC	5.5310	5.8410	INDOOR
GT1 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT2 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT3 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
STG GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
FUEL GAS DEWPOINT HEATER A	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER B	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER C	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER D	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER E	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID A	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID B	5.2762	5.8320	OUTDOOR
NITROGEN BOTTLE RACK	OWNER	5.8320	OUTDOOR
BULK CO2 STORAGE SKID	OWNER	5.8320	OUTDOOR
UF SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
UF SODIUM HYDROXIDE TOTE	OWNER	5.8320	INDOOR
UF CITRIC ACID TOTE	OWNER	5.8320	INDOOR
DCS	5.6110	5.8410	INDOOR
COMMON GT WATER WASH SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #1	5.1120	5.8320	INDOOR
GT1 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT1 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT1 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT1 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT1 ENCLOSURE	5.1120	5.8320	INDOOR
GT1 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT1 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT1 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT1 GENERATOR	5.1120	5.8320	INDOOR
GT1 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT1 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT1 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT1 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT1 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT1 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT1 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT1 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT1 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT1 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT1 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT1 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT1 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT1 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT1 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #2	5.1120	5.8320	INDOOR
GT2 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT2 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT2 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT2 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT2 ENCLOSURE	5.1120	5.8320	INDOOR
GT2 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT2 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT2 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT2 GENERATOR	5.1120	5.8320	INDOOR
GT2 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT2 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT2 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT2 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT2 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT2 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT2 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT2 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT2 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT2 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT2 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT2 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT2 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT2 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #3	5.1120	5.8320	INDOOR
GT3 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT3 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT3 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT3 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT3 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT3 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT3 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT3 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT3 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT3 ENCLOSURE	5.1120	5.8320	INDOOR
GT3 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT3 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT3 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT3 GENERATOR	5.1120	5.8320	INDOOR
GT3 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT3 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT3 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT3 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT3 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT3 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT3 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT3 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT3 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT3 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT3 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT3 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT3 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT3 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT3 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT3 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT3 SEE TRANSFORMER	5.1120	5.8410	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT3 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT3 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT3 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT3 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT3 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #4	5.1120	5.8320	INDOOR
GT4 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT4 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT4 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT4 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT4 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT4 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT4 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT4 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT4 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT4 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT4 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT4 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT4 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT4 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT4 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT4 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT4 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT4 ENCLOSURE	5.1120	5.8320	INDOOR
GT4 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT4 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT4 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT4 GENERATOR	5.1120	5.8320	INDOOR
GT4 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT4 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT4 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT4 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT4 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT4 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT4 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT4 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT4 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT4 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT4 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT4 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT4 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT4 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT4 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT4 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT4 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT4 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT4 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT4 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT4 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT4 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT4 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT4 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT4 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT4 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT4 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT4 SFC TRANSFORMER	5.1120	5.8410	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT4 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT4 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT4 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT4 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT4 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT4 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT4 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT4 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #5	5.1120	5.8320	INDOOR
GT5 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT5 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT5 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT5 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT5 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT5 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT5 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT5 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT5 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT5 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT5 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT5 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT5 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT5 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT5 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT5 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT5 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT5 ENCLOSURE	5.1120	5.8320	INDOOR
GT5 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT5 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT5 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT5 GENERATOR	5.1120	5.8320	INDOOR
GT5 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT5 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT5 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT5 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT5 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT5 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT5 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT5 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT5 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT5 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT5 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT5 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT5 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT5 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT5 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT5 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT5 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT5 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT5 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT5 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT5 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT5 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT5 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT5 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT5 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT5 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT5 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT5 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT5 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT5 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT5 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT5 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT5 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT5 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT5 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT5 WATER INJECTION SKID	5.1120	5.8320	INDOOR
DIESEL FIRE PUMP	5.2150	5.8320	INDOOR
ELECTRIC FIRE PUMP	5.2150	5.8320	INDOOR
JOCKEY FIRE PUMP AND ENCLOSURE FEED	5.2150	5.8320	INDOOR
FUEL OIL FORWARDING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP D	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP E	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP F	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL TRANSFER PUMP	5.2190	5.8320	OUTDOOR
FUEL OIL HEATER A	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER B	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER C	5.2762	5.8320	OUTDOOR
WASTEWATER SUMP PUMP A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP B	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP C	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP D	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP E	5.2180	5.8320	OUTDOOR
CLARIFIED WATER TRANSFER PUMP A	5.2180	5.8320	INDOOR
CLARIFIED WATER TRANSFER PUMP B	5.2180	5.8320	INDOOR
GTG1 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG1 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
GTG2 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG2 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
GTG3 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG3 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
GTG4 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG4 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
GTG5 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG5 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
DEMINERALIZED WATER PUMP A	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP B	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP C	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP D	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP E	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP F	5.2190	5.8320	INDOOR
SERVICE WATER PUMP A	5.2190	5.8320	INDOOR
SERVICE WATER PUMP B	5.2190	5.8320	INDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #1	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 1	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 2	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 3	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 4	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 5	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 6	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 7	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 8	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 9	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 10	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 11	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 12	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #2	5.2215	5.8320	OUTDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 13	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 14	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 15	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 16	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 17	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 18	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 19	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 20	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 21	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 22	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 23	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 24	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #3	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 25	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 26	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 27	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 28	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 29	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 30	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 31	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 32	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 33	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 34	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 35	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 36	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #4	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 37	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 38	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 39	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 40	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 41	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 42	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 43	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 44	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 45	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 46	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 47	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 48	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #5	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 49	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 50	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 51	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 52	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 53	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 54	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 55	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 56	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 57	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 58	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 59	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 60	5.2215	5.8320	OUTDOOR
POTABLE WATER WATER HEATER TANK	5.2490	5.8320	INDOOR
AIR COMPRESSOR A	5.2710	5.8320	INDOOR
AIR COMPRESSOR B	5.2710	5.8320	INDOOR
AIR DRYER A	5.2710	5.8320	INDOOR
AIR DRYER B	5.2710	5.8320	INDOOR
DRY AIR RECEIVER	5.2980	5.8320	INDOOR
WET AIR RECEIVER	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #1	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #2	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #3	5.2980	5.8320	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
PULSE AIR RECEIVER #4	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #5	5.2980	5.8320	INDOOR
FUEL GAS COALESCING FILTER SEPARATOR SKID	5.2762	5.8320	OUTDOOR
DRAINS TANK	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR	5.2762	5.8320	OUTDOOR
GTG1 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG2 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG3 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG4 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG5 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG1 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
GTG2 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
GTG3 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
GTG4 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
GTG5 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
OIL WATER SEPAERATOR #1	5.2940	5.8220	OUTDOOR
OIL WATER SEPAERATOR #2	5.2940	5.8220	OUTDOOR
SANITARY LIFT STATION #1	5.2191	5.8220	OUTDOOR
SANITARY LIFT STATION #2	5.2191	5.8220	OUTDOOR
SANITARY TREAMENT FACILITY	5.3430	5.8320	OUTDOOR
DEMINERALIZED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK HEATERS	5.8570	5.8570	OUTDOOR
CLARIFIED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK 1	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK 2	5.8570	5.8570	OUTDOOR
CLOSED COOLING EXPANSION TANK 1	5.2980	5.8320	OUTDOOR
CLOSED COOLING EXPANSION TANK 2	5.2980	5.8320	OUTDOOR
CLOSED COOLING EXPANSION TANK 3	5.2980	5.8320	OUTDOOR
CLOSED COOLING EXPANSION TANK 4	5.2980	5.8320	OUTDOOR
CLOSED COOLING EXPANSION TANK 5	5.2980	5.8320	OUTDOOR
AUTOMATIC BACKWASH STRAINER & OIL/GREASE CARTRIDGE FILTER SKID	5.3210	5.8320	INDOOR
UF FILTER TRAIN A	5.3210	5.8320	INDOOR
UF FILTER TRAIN B	5.3210	5.8320	INDOOR
ULTRAFILTRATION (UF) BACKWASH PUMP SKID	5.3210	5.8320	INDOOR
UF CHEMICAL ENHANCED BACKWASH (CEB) SODIUM HYDROXIDE FEED SKID	5.3210	5.8320	INDOOR
UF CEB SODIUM HYPOCHLORITE FEED SKID	5.3210	5.8320	INDOOR
UF CEB CITRIC ACID FEED SKID	5.3210	5.8320	INDOOR
UF BACKWASH TANK	5.3210	5.8320	INDOOR
SAMPLE ANALYSIS COOLER	5.3310	5.8320	INDOOR
SAMPLE ANALYSIS PANEL	5.3310	5.8320	INDOOR
GAS TURBINE ENCLOSURE AIR HANDLING UNITS (AHU)	5.4410	5.8340	INDOOR
GAS TURBINE ENCLOSURE FANS	5.4410	5.8340	OUTDOOR
GAS TURBINE ENCLOSURE GAS UNIT HEATERS (GUH)	5.4410	5.8340	INDOOR
GAS TURBINE ENCLOSURE LOUVERS	5.4410	5.8340	INDOOR
ADMIN/WAREHOUSE BUILDING ELECTRIC UNIT HEATERS (EUH)	5.4410	5.8340	INDOOR
ADMIN/WAREHOUSE BUILDING FANS	5.4410	5.8340	OUTDOOR
ADMIN/WAREHOUSE BUILDING LOUVERS	5.4410	5.8340	INDOOR
ADMIN/WAREHOUSE BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.4410	5.8340	OUTDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATERS (EUH)	5.4410	5.8340	INDOOR
WATER TREATMENT BUILDING FANS	5.4410	5.8340	OUTDOOR
WATER TREATMENT BUILDING LOUVERS	5.4410	5.8340	INDOOR
WATER TREATMENT BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.4410	5.8340	OUTDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GTG1 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG1 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG2 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG2 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG3 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG3 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG4 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG4 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG5 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG5 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG1 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG2 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG3 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG4 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG5 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG1 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG2 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG3 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG4 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG5 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STANDBY DIESEL GENERATOR	5.5240	5.8410	OUTDOOR
4160V SWGR 4	5.5310	5.8410	INDOOR
4160V SWGR 5	5.5310	5.8410	INDOOR
ACHE MCC 1	5.5310	5.8410	INDOOR
ACHE MCC 2	5.5310	5.8410	INDOOR
ACHE MCC 3	5.5310	5.8410	INDOOR
ACHE MCC 4	5.5310	5.8410	INDOOR
ACHE MCC 5	5.5310	5.8410	INDOOR
BOP MCC 1	5.5310	5.8410	INDOOR
BOP MCC 2	5.5310	5.8410	INDOOR
BOP MCC 3	5.5310	5.8410	INDOOR
BOP MCC 4	5.5310	5.8410	INDOOR
BOP1 480V SWGR	5.5310	5.8410	INDOOR
BOP1 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP2 480V SWGR	5.5310	5.8410	INDOOR
BOP2 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ESSENTIAL 480V SWGR	5.5310	5.8410	INDOOR
ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 480V SWGR	5.5310	5.8410	INDOOR
GTG1 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 MCC	5.5310	5.8410	INDOOR
GTG1 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GTG2 480V SWGR	5.5310	5.8410	INDOOR
GTG2 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG2 MCC	5.5310	5.8410	INDOOR
GTG2 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GTG3 480V SWGR	5.5310	5.8410	INDOOR
GTG3 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG3 MCC	5.5310	5.8410	INDOOR
GTG3 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GTG4 480V SWGR	5.5310	5.8410	INDOOR
GTG4 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG4 MCC	5.5310	5.8410	INDOOR
GTG4 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GTG5 480V SWGR	5.5310	5.8410	INDOOR
GTG5 ESSENTIAL MCC	5.5310	5.8410	INDOOR

157787 - SMITH (5) SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GTG5 MCC	5.5310	5.8410	INDOOR
GTG5 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP UPS AND 125VDC SYSTEM	5.5310	5.8410	INDOOR
WATER TREATMENT MCC	5.5310	5.8410	INDOOR
WATER TREATMENT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GT1 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT2 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT3 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT4 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT5 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT1 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT2 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT3 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT4 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT5 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR

157787 - TYGARTS CREEK SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
FUEL GAS DEWPOINT HEATER A	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER B	5.2762	5.8320	OUTDOOR
FUEL GAS DEWPOINT HEATER C	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID A	5.2762	5.8320	OUTDOOR
FUEL GAS REGULATING/METERING SKID B	5.2762	5.8320	OUTDOOR
NITROGEN BOTTLE RACK	OWNER	5.8320	OUTDOOR
BULK CO2 STORAGE SKID	OWNER	5.8320	OUTDOOR
SODIUM HYPOCHLORITE TOTE	OWNER	5.8320	INDOOR
DCS	5.6110	5.8410	INDOOR
COMMON GT WATER WASH SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #1	5.1120	5.8320	INDOOR
GT1 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT1 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT1 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT1 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT1 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT1 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT1 ENCLOSURE	5.1120	5.8320	INDOOR
GT1 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT1 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT1 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT1 GENERATOR	5.1120	5.8320	INDOOR
GT1 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT1 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT1 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT1 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT1 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT1 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT1 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT1 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT1 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT1 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT1 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT1 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT1 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT1 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT1 SFC TRANSFORMER	5.1120	5.8410	INDOOR

157787 - TYGARTS CREEK SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT1 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT1 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT1 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT1 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #2	5.1120	5.8320	INDOOR
GT2 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT2 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT2 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT2 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT2 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT2 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT2 ENCLOSURE	5.1120	5.8320	INDOOR
GT2 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT2 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT2 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT2 GENERATOR	5.1120	5.8320	INDOOR
GT2 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT2 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT2 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT2 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT2 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT2 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT2 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT2 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT2 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT2 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT2 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT2 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT2 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT2 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT2 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT2 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT2 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR

157787 - TYGARTS CREEK SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT2 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT2 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT2 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT2 WATER INJECTION SKID	5.1120	5.8320	INDOOR
GAS TURBINE GENERATOR - #3	5.1120	5.8320	INDOOR
GT3 AIR INLET FILTER	5.1120	5.8320	OUTDOOR
GT3 BATTERY CHARGER	5.1120	5.8410	INDOOR
GT3 BEARING LIFT OIL PUMP	5.1120	5.8320	INDOOR
GT3 COLLECTOR BLOWER #1	5.1120	5.8320	INDOOR
GT3 COLLECTOR BLOWER #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FAN	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FILTER #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL FILTER #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL PUMP #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL PUMP #2	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT3 CONTROL OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT3 ELECTRICAL PACKAGE	5.1120	5.8410	INDOOR
GT3 ELECTRICAL PACKAGE HVAC UNIT #1	5.1120	5.8410	INDOOR
GT3 ELECTRICAL PACKAGE HVAC UNIT #2	5.1120	5.8410	INDOOR
GT3 EMERGENCY DC LUBE OIL PUMP	5.1120	5.8320	INDOOR
GT3 ENCLOSURE	5.1120	5.8320	INDOOR
GT3 EVAPORATIVE COOLER	5.1120	5.8320	INDOOR
GT3 FUEL GAS PERFORMANCE HEATER	5.1120	5.8320	INDOOR
GT3 FUEL OIL SKID	5.1120	5.8320	INDOOR
GT3 GENERATOR	5.1120	5.8320	INDOOR
GT3 GENERATOR SPACE HEATER	5.1120	5.8320	INDOOR
GT3 HIGH SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT3 HYDRAULIC SKID	5.1120	5.8320	INDOOR
GT3 KNOCKOUT DRUM	5.1120	5.8320	INDOOR
GT3 LOW SPEED TURNING GEAR	5.1120	5.8320	INDOOR
GT3 LP CO2 FIRE PROTECTION SKID	5.1120	5.8320	INDOOR
GT3 LUBE OIL COOLER #1 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT3 LUBE OIL COOLER #2 (PLATE & FRAME HX)	5.1120	5.8320	INDOOR
GT3 LUBE OIL FILTER #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL FILTER #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL PUMP #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL PUMP #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #2	5.1120	5.8320	INDOOR
GT3 LUBE OIL RESERVOIR HEATER #3	5.1120	5.8320	INDOOR
GT3 LUBE OIL VAPOR EXTRACTOR #1	5.1120	5.8320	INDOOR
GT3 LUBE OIL VAPOR EXTRACTOR #2	5.1120	5.8320	INDOOR
GT3 LV PANEL BOARD TRANSFORMER	5.1120	5.8410	INDOOR
GT3 MAIN FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT3 OIL SKID & COOLER	5.1120	5.8320	INDOOR
GT3 PILOT FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 PILOT FUEL GAS FILTER	5.1120	5.8320	INDOOR
GT3 PURGE/INSTRUMENT AIR COMPRESSOR	5.1120	5.8320	INDOOR
GT3 ROTOR AIR COOLER (KETTLE BOILER)	5.1120	5.8320	INDOOR
GT3 SEE TRANSFORMER	5.1120	5.8410	INDOOR
GT3 SEE/SFC PACKAGE	5.1120	5.8410	INDOOR
GT3 SFC TRANSFORMER	5.1120	5.8410	INDOOR
GT3 STAGE A FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 STAGE B FLOW DIVIDER	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #1	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #2	5.1120	5.8320	INDOOR

157787 - TYGARTS CREEK SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
GT3 TURBINE VENT FAN #3	5.1120	5.8320	INDOOR
GT3 TURBINE VENT FAN #4	5.1120	5.8320	INDOOR
GT3 VT SURGE/SFC SWITCH CUBICLE	5.1120	5.8410	INDOOR
GT3 WATER INJECTION SKID	5.1120	5.8320	INDOOR
DIESEL FIRE PUMP	5.2150	5.8320	INDOOR
ELECTRIC FIRE PUMP	5.2150	5.8320	INDOOR
JOCKEY FIRE PUMP AND ENCLOSURE FEED	5.2150	5.8320	INDOOR
FUEL OIL FORWARDING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL FORWARDING PUMP D	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP A	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP B	5.2190	5.8320	OUTDOOR
FUEL OIL UNLOADING PUMP C	5.2190	5.8320	OUTDOOR
FUEL OIL TRANSFER PUMP	5.2190	5.8320	OUTDOOR
FUEL OIL HEATER A	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER B	5.2762	5.8320	OUTDOOR
FUEL OIL HEATER C	5.2762	5.8320	OUTDOOR
WASTEWATER SUMP PUMP A	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP B	5.2180	5.8320	OUTDOOR
WASTEWATER SUMP PUMP C	5.2180	5.8320	OUTDOOR
DEEP WELL	5.8160	5.8160	OUTDOOR
WELL PUMP A	5.8160	5.8160	OUTDOOR
WELL PUMP B	5.8160	5.8160	OUTDOOR
GTG1 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG1 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
GTG2 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG2 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
GTG3 CLOSED COOLING WATER PUMP A	5.2190	5.8320	OUTDOOR
GTG3 CLOSED COOLING WATER PUMP B	5.2190	5.8320	OUTDOOR
DEMINERALIZED WATER PUMP A	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP B	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP C	5.2190	5.8320	INDOOR
DEMINERALIZED WATER PUMP D	5.2190	5.8320	INDOOR
SERVICE WATER PUMP A	5.2190	5.8320	INDOOR
SERVICE WATER PUMP B	5.2190	5.8320	INDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #1	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 1	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 2	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 3	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 4	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 5	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 6	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 7	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 8	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 9	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 10	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 11	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 12	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #2	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 13	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 14	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 15	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 16	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 17	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 18	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 19	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 20	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 21	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 22	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 23	5.2215	5.8320	OUTDOOR

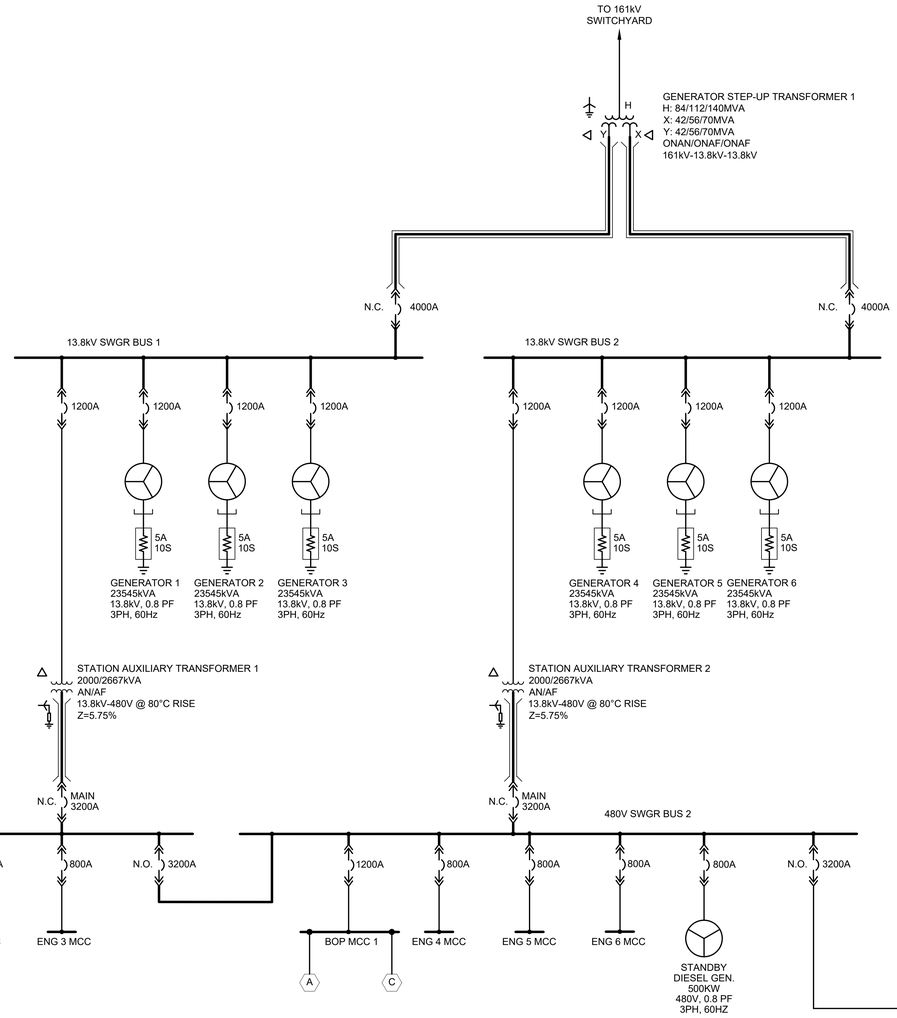
157787 - TYGARTS CREEK SCGT EQUIPMENT LIST

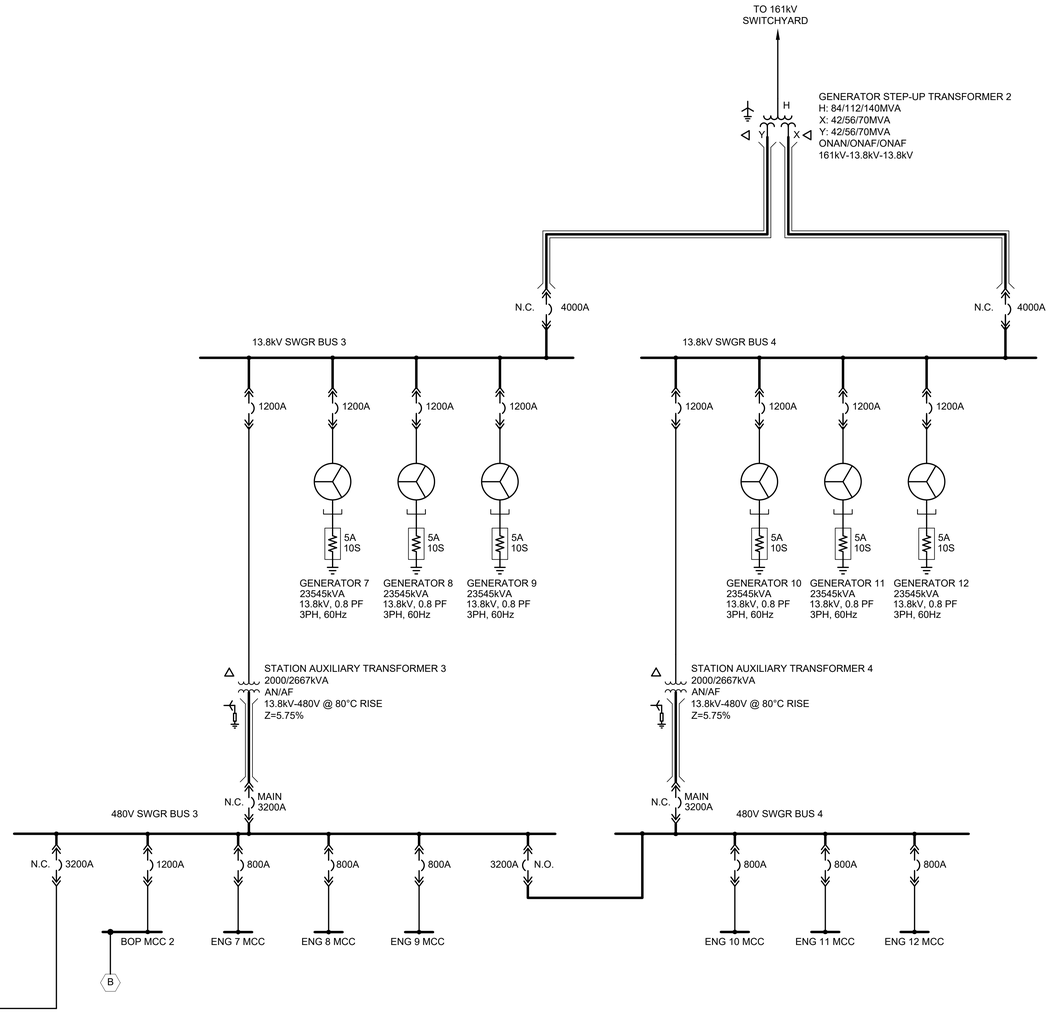
Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 24	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) #3	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 25	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 26	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 27	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 28	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 29	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 30	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 31	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 32	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 33	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 34	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 35	5.2215	5.8320	OUTDOOR
AIR-COOLED HEAT EXCHANGER (ACHE) FAN 36	5.2215	5.8320	OUTDOOR
POTABLE WATER WATER HEATER TANK	5.2490	5.8320	INDOOR
AIR COMPRESSOR A	5.2710	5.8320	INDOOR
AIR COMPRESSOR B	5.2710	5.8320	INDOOR
AIR DRYER A	5.2710	5.8320	INDOOR
AIR DRYER B	5.2710	5.8320	INDOOR
DRY AIR RECEIVER	5.2980	5.8320	INDOOR
WET AIR RECEIVER	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #1	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #2	5.2980	5.8320	INDOOR
PULSE AIR RECEIVER #3	5.2980	5.8320	INDOOR
FUEL GAS COALESCING FILTER SEPARATOR SKID	5.2762	5.8320	OUTDOOR
DRAINS TANK	5.2762	5.8320	OUTDOOR
FUEL GAS COALESCING FILTER SEPARATOR	5.2762	5.8320	OUTDOOR
GTG1 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG2 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG3 FUEL GAS DRAINS TANK	5.2762	5.8320	INDOOR
GTG1 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
GTG2 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
GTG3 WASH WATER DRAINS TANK	5.2940	5.8220	OUTDOOR
OIL WATER SEPARATOR #1	5.2940	5.8220	OUTDOOR
SANITARY LIFT STATION #1	5.2191	5.8220	OUTDOOR
SANITARY LIFT STATION #2	5.2191	5.8220	OUTDOOR
SANITARY TREAMENT FACILITY	5.3430	5.8320	OUTDOOR
DEMINERALIZED WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK	5.8570	5.8570	OUTDOOR
SERVICE/FIRE WATER STORAGE TANK HEATERS	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK	5.8570	5.8570	OUTDOOR
FUEL OIL STORAGE TANK HEATERS	5.8570	5.8570	OUTDOOR
CLOSED COOLING EXPANSION TANK 1	5.2980	5.8320	OUTDOOR
CLOSED COOLING EXPANSION TANK 2	5.2980	5.8320	OUTDOOR
CLOSED COOLING EXPANSION TANK 3	5.2980	5.8320	OUTDOOR
AUTOMATIC BACKWASH STRAINER & OIL/GREASE CARTRIDGE FILTER SKID	5.3210	5.8320	INDOOR
SODIUM HYPOCHLORITE FEED SKID	5.3210	5.8320	INDOOR
SAMPLE ANALYSIS COOLER	5.3310	5.8320	INDOOR
SAMPLE ANALYSIS PANEL	5.3310	5.8320	INDOOR
GAS TURBINE ENCLOSURE AIR HANDLING UNITS (AHU)	5.4410	5.8340	INDOOR
GAS TURBINE ENCLOSURE FANS	5.4410	5.8340	OUTDOOR
GAS TURBINE ENCLOSURE GAS UNIT HEATERS (GUH)	5.4410	5.8340	INDOOR
GAS TURBINE ENCLOSURE LOUVERS	5.4410	5.8340	INDOOR
ADMIN/WAREHOUSE BUILDING ELECTRIC UNIT HEATERS (EUH)	5.4410	5.8340	INDOOR
ADMIN/WAREHOUSE BUILDING FANS	5.4410	5.8340	OUTDOOR
ADMIN/WAREHOUSE BUILDING LOUVERS	5.4410	5.8340	INDOOR
ADMIN/WAREHOUSE BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.4410	5.8340	OUTDOOR
WATER TREATMENT BUILDING ELECTRIC UNIT HEATERS (EUH)	5.4410	5.8340	INDOOR
WATER TREATMENT BUILDING FANS	5.4410	5.8340	OUTDOOR

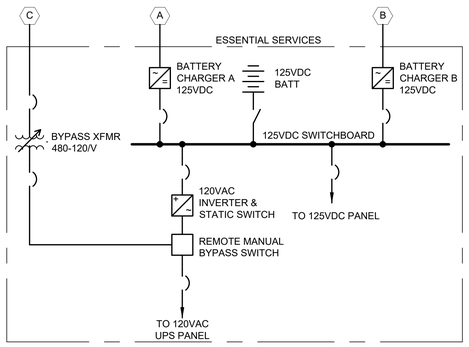
157787 - TYGARTS CREEK SCGT EQUIPMENT LIST

Equipment Name/Description	Supply Contract	Install Contract	Indoor / Outdoor
WATER TREATMENT BUILDING LOUVERS	5.4410	5.8340	INDOOR
WATER TREATMENT BUILDING SELF-CONTAINED AIR-CONDITIONING UNITS (SAU)	5.4410	5.8340	OUTDOOR
GTG1 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG1 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG2 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG2 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG3 AUXILIARY TRANSFORMER	5.5120	5.8410	OUTDOOR
GTG3 GENERATOR STEP-UP (GSU) TRANSFORMER	5.5110	5.8410	OUTDOOR
GTG1 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG2 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG3 GENERATOR BREAKER	5.5210	5.8410	OUTDOOR
GTG1 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG2 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
GTG3 ISOPHASE BUS DUCT	5.5220	5.8410	INDOOR/ OUTDOOR
STANDBY DIESEL GENERATOR	5.5240	5.8410	OUTDOOR
4160V SWGR 1	5.5310	5.8410	INDOOR
4160V SWGR 2	5.5310	5.8410	INDOOR
4160V SWGR 3	5.5310	5.8410	INDOOR
ACHE MCC 1	5.5310	5.8410	INDOOR
ACHE MCC 2	5.5310	5.8410	INDOOR
ACHE MCC 3	5.5310	5.8410	INDOOR
BOP MCC 1	5.5310	5.8410	INDOOR
BOP MCC 2	5.5310	5.8410	INDOOR
BOP MCC 3	5.5310	5.8410	INDOOR
BOP1 480V SWGR	5.5310	5.8410	INDOOR
BOP1 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP2 480V SWGR	5.5310	5.8410	INDOOR
BOP2 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
ESSENTIAL 480V SWGR	5.5310	5.8410	INDOOR
ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 480V SWGR	5.5310	5.8410	INDOOR
GTG1 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG1 MCC	5.5310	5.8410	INDOOR
GTG1 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GTG2 480V SWGR	5.5310	5.8410	INDOOR
GTG2 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG2 MCC	5.5310	5.8410	INDOOR
GTG2 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GTG3 480V SWGR	5.5310	5.8410	INDOOR
GTG3 ESSENTIAL MCC	5.5310	5.8410	INDOOR
GTG3 MCC	5.5310	5.8410	INDOOR
GTG3 STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
BOP UPS AND 125VDC SYSTEM	5.5310	5.8410	INDOOR
WATER TREATMENT MCC	5.5310	5.8410	INDOOR
WATER TREATMENT STATION SERVICE TRANSFORMER	5.5310	5.8410	OUTDOOR
GT1 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT2 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT3 CEMS SHELTER	5.6310	5.8320	OUTDOOR
GT1 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT2 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR
GT3 GSU TRANSFORMER DELUGE VALVE SHED	5.8360	5.8360	OUTDOOR

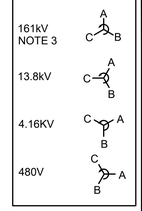
APPENDIX E – ONE-LINE DIAGRAMS







PHASE ROTATION



NOTES:

1. EQUIPMENT LOCATION ABBREVIATIONS ARE AS FOLLOWS:
   -BOP = BALANCE OF PLANT
   -XFMR = TRANSFORMER
   -SWGR = SWITCHGEAR
   -MV = MEDIUM VOLTAGE
2. ALL EQUIPMENT SIZES AND BUS ARRANGEMENTS ARE CONCEPTUAL AND SUBJECT TO CHANGE
3. PHASE ROTATION AT THE SWITCHYARD LEVEL SHOULD BE VERIFIED AND UPDATED IF NEEDED.

PRELIMINARY - NOT FOR CONSTRUCTION

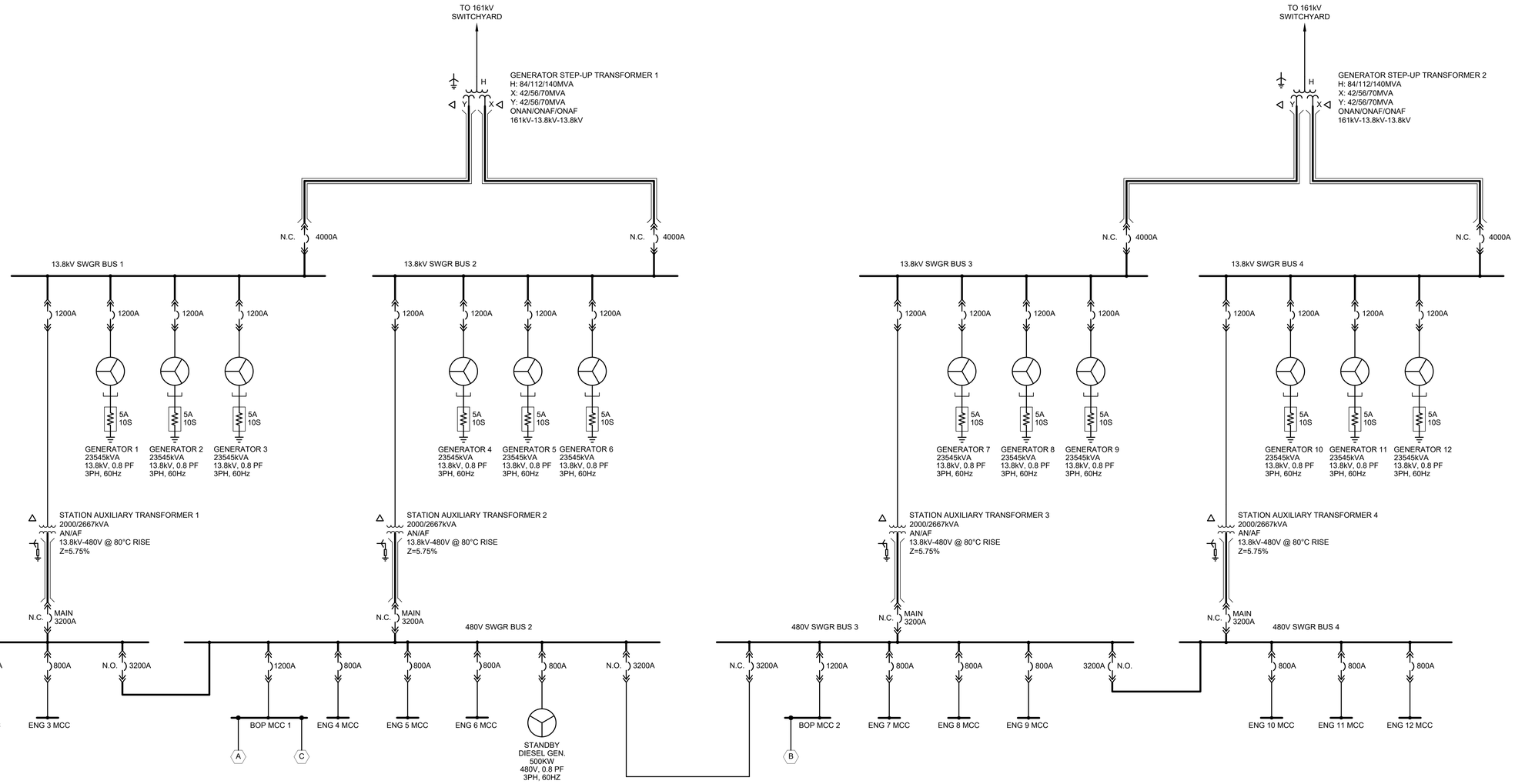
no.	date	by	ckd	description
A	07/21/23	BO	JB	ISSUED FOR REVIEW

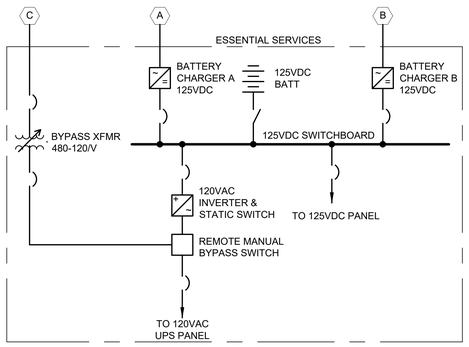
BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.
Firm Reg. No. 43
designed B. OXANDALE
detailed B. OXANDALE

EAST KENTUCKY POWER COOPERATIVE
TAYLOR COUNTY, KENTUCKY

CAMPBELL SITE 4
ONE-LINE DIAGRAM
12 X RECIP

project 157785 | contract -
drawing EE003 – rev. A
sheet of sheets
file 157785_EE003.dwg





PHASE ROTATION

161kV NOTE 3

13.8kV

4.16KV

480V

NOTES:

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PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	07/21/23	BO	JB	ISSUED FOR REVIEW

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9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.
Firm Reg. No. 43
designed B. OXANDALE
detailed B. OXANDALE

EAST KENTUCKY POWER COOPERATIVE
CASEY COUNTY, KENTUCKY

LIBERTY
ONE-LINE DIAGRAM
12 X RECIP

project 157785 | contract -
drawing EE004 – rev. A
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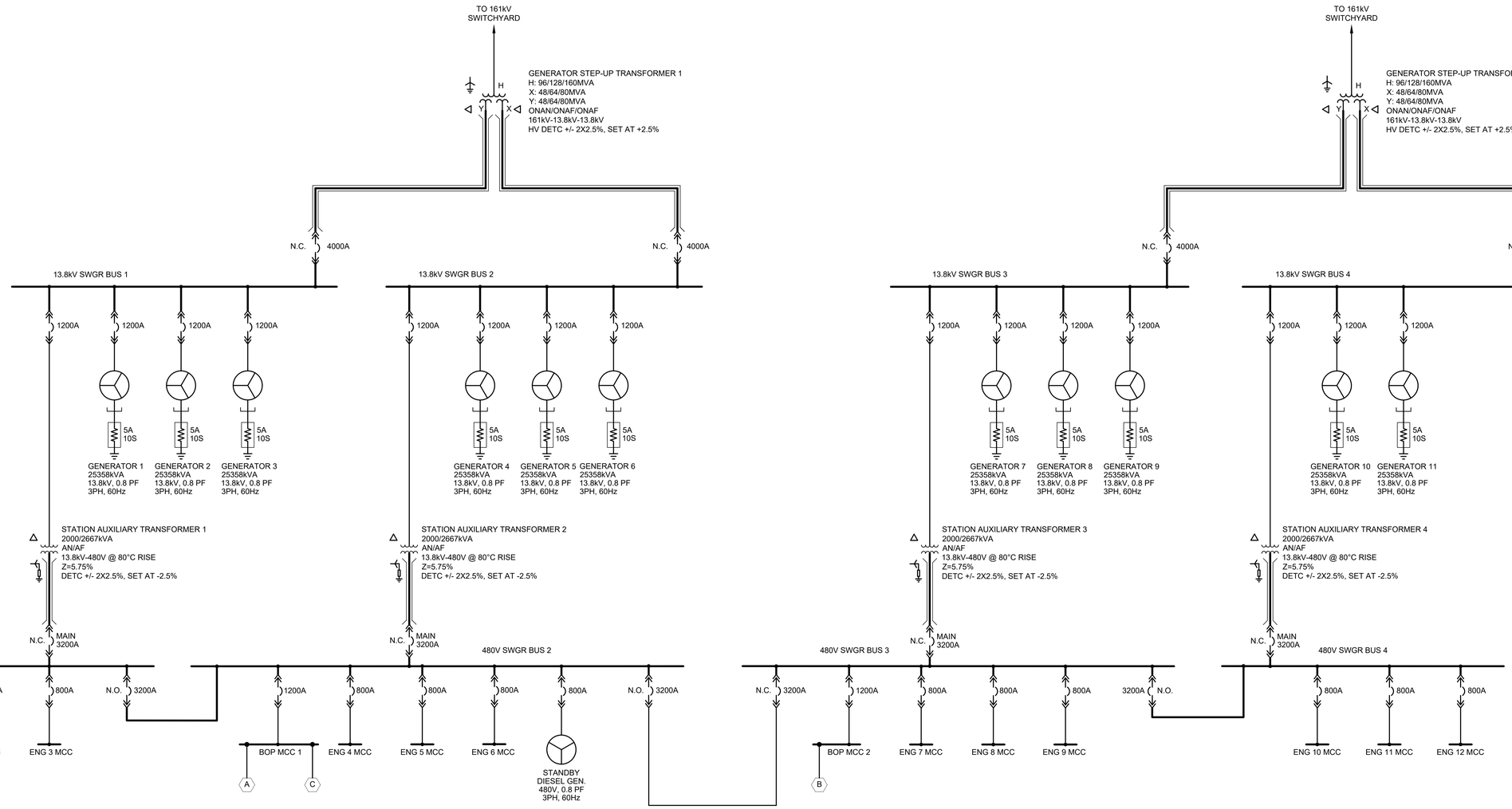

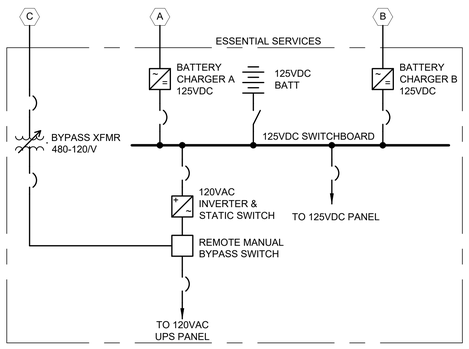

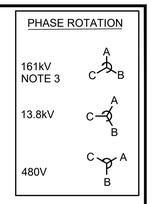

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PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	08/17/23	HA	DDP	ISSUED FOR REVIEW

no.	date	by	ckd	description

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TAYLOR COUNTY, KENTUCKY

CAMPBELLSVILLE
ONE-LINE DIAGRAM
11 X RECIP

project 157785 | contract -

drawing **EE008 – A** | rev.

sheet of sheets

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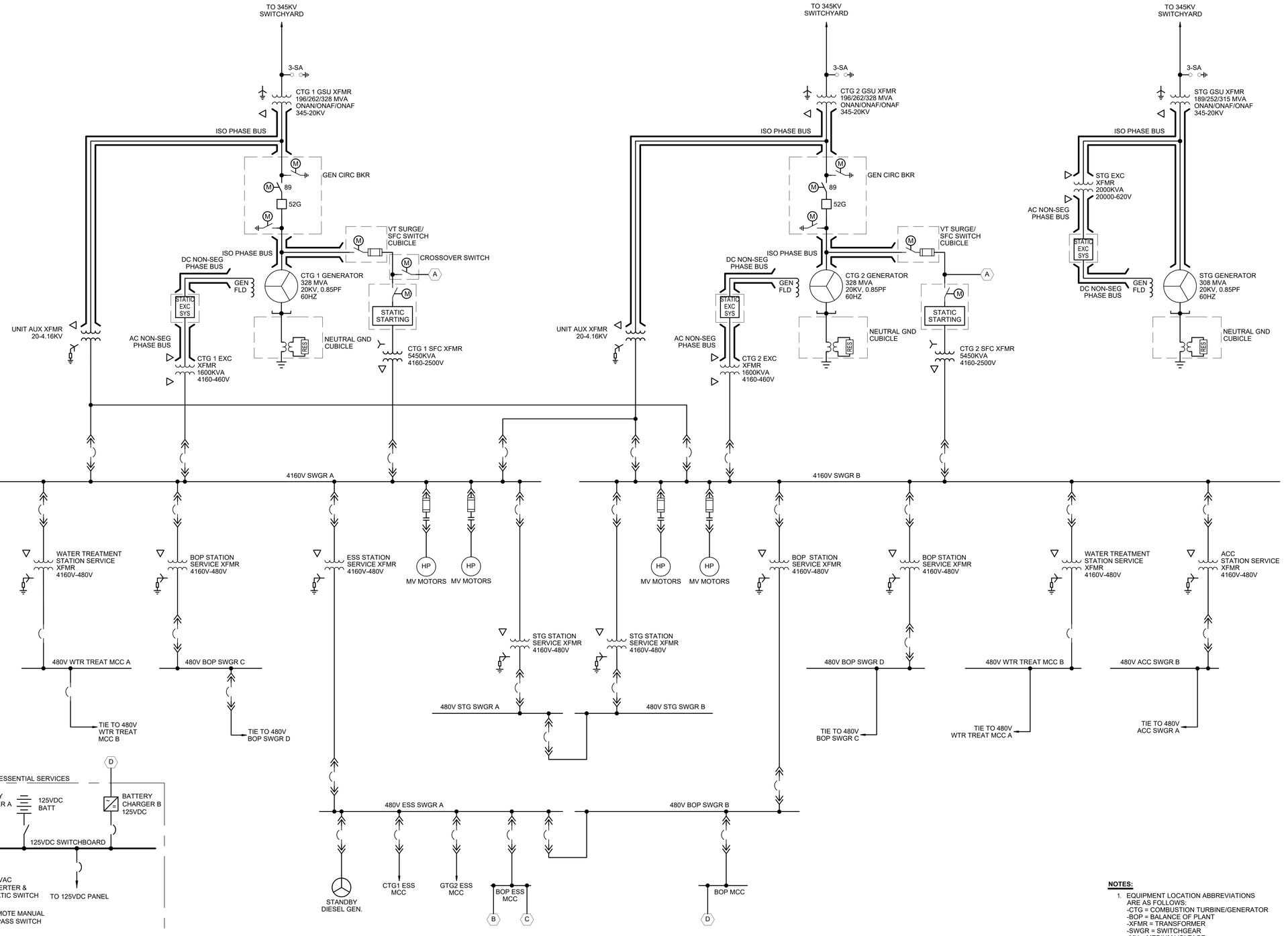
Millimeters
Inches
Scale For Microfilming



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Firm Reg. No. 43

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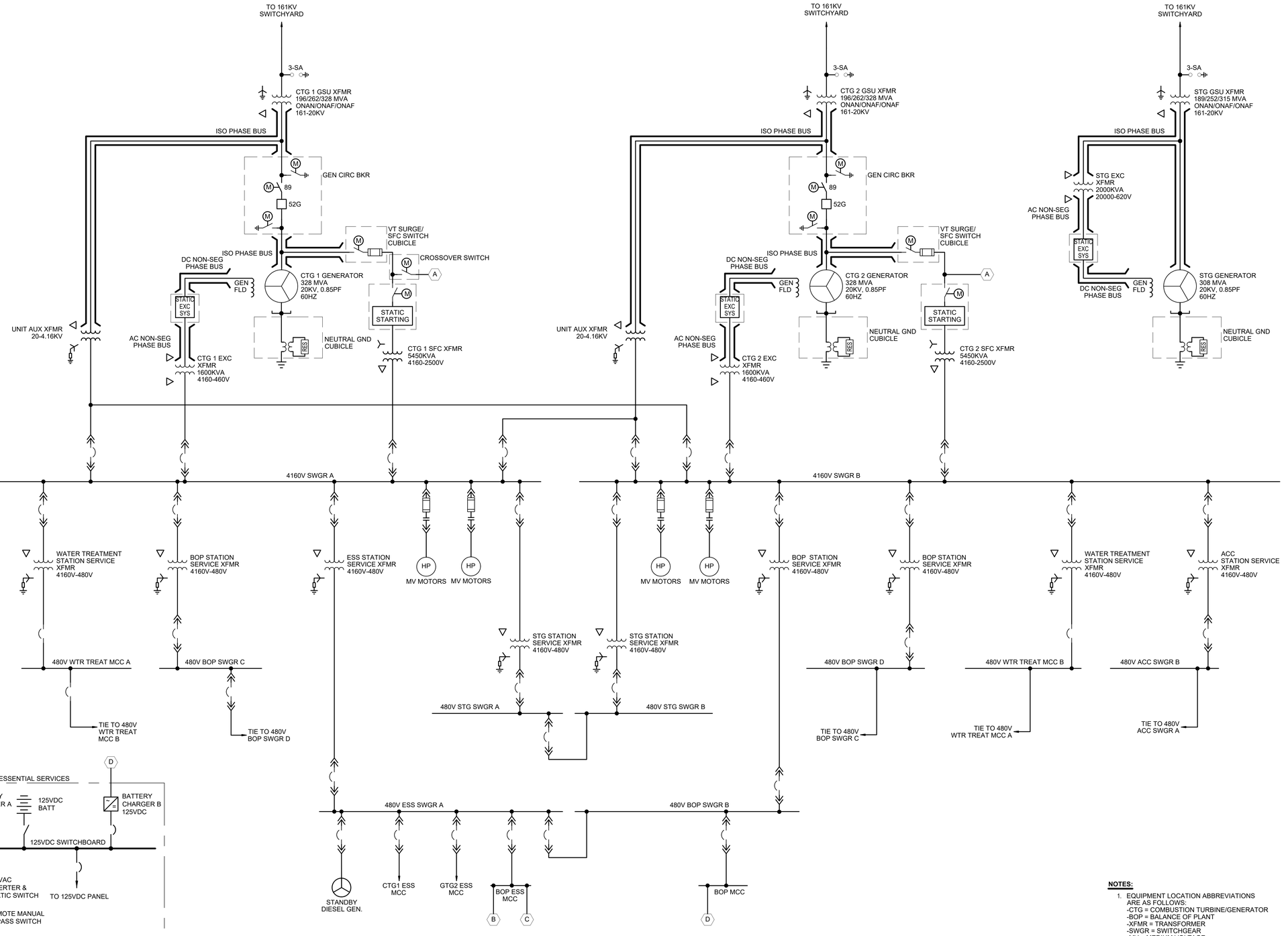
detailed: B. OXANDALE

EAST KENTUCKY POWER COOPERATIVE
CLARK COUNTY, KENTUCKY

J.K. SMITH STATION
ONE-LINE DIAGRAM
2 X 1 CC F-CLASS

project: 157785
contract: -
drawing: EE002 – A
sheet: of sheets
file: 157785_EE002.dwg

Scale For Microfilming: Millimeters / Inches



PHASE ROTATION

161kV NOTE 3

20kV

4.16KV

480V

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PULASKI COUNTY, KENTUCKY

JOHN SHERMAN COOPER STATION
ONE-LINE DIAGRAM
2 X 1 CC F-CLASS

project 157785 | contract -
drawing **EE006 – A** | rev.
sheet | of | sheets
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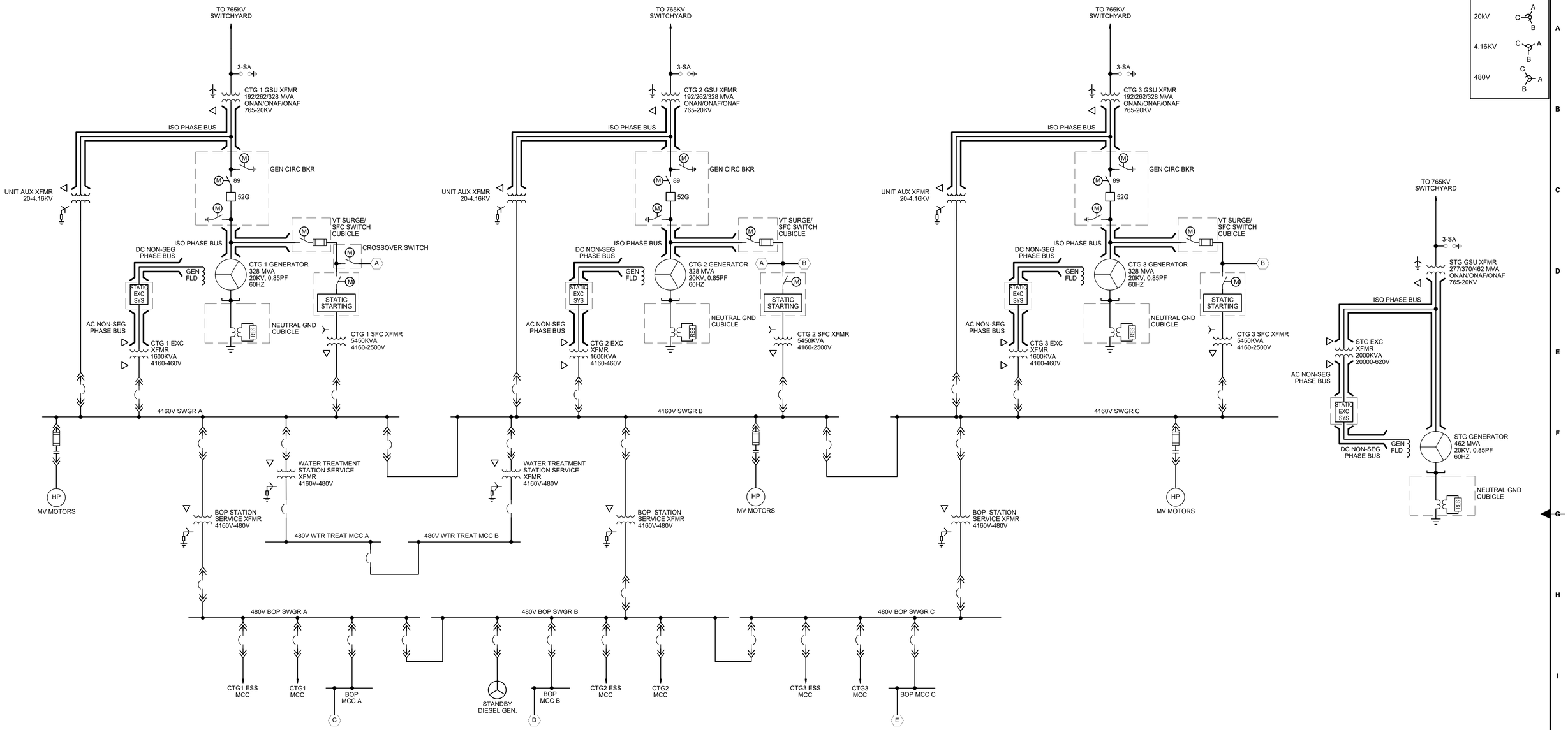
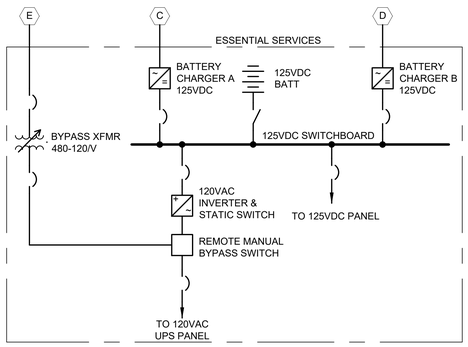
Scale For Microfilming
Millimeters
Inches





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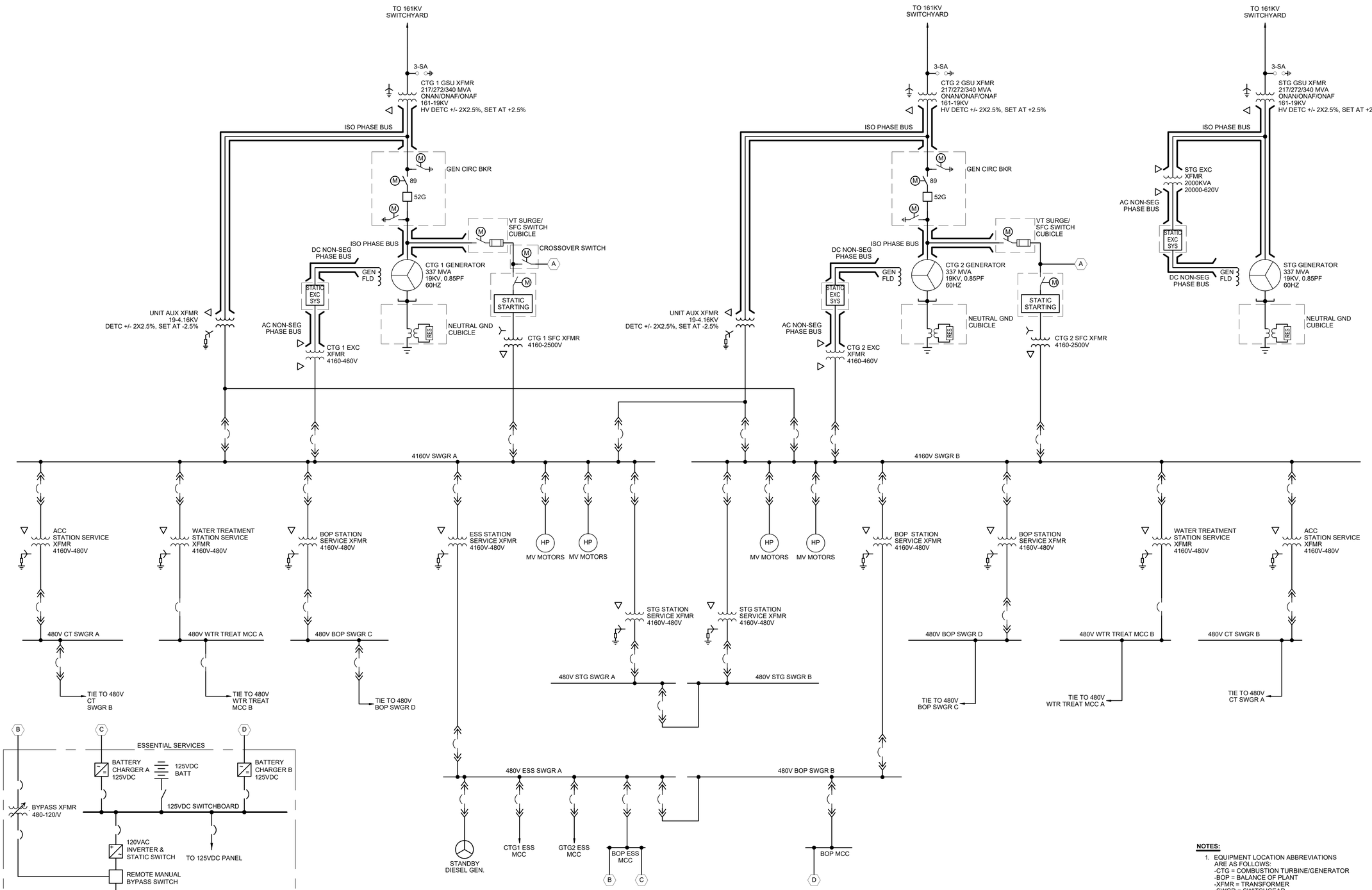
EAST KENTUCKY POWER COOPERATIVE
GREENUP COUNTY, KENTUCKY

TYGART CREEK STATION
ONE-LINE DIAGRAM
3 X 1 CC F-CLASS

project: 157785 | contract: -
drawing: EE007 | rev: A
sheet: | of: | sheets:
file: 157785_EE007.dwg

Scale For Microfilming: Millimeters / Inches



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   CT = COOLING TOWER
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PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	09/11/23	HA	XX	ISSUED FOR REVIEW

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EAST KENTUCKY POWER COOPERATIVE

PULASKI COUNTY, KENTUCKY

JOHN SHERMAN COOPER STATION
ONE-LINE DIAGRAM
2 X 1 CC F-CLASS

project 157785 | contract -

drawing **EE009 – A** | rev.

sheet of sheets

file 157785_EE009.dwg

Scale For Microfilming: Millimeters / Inches

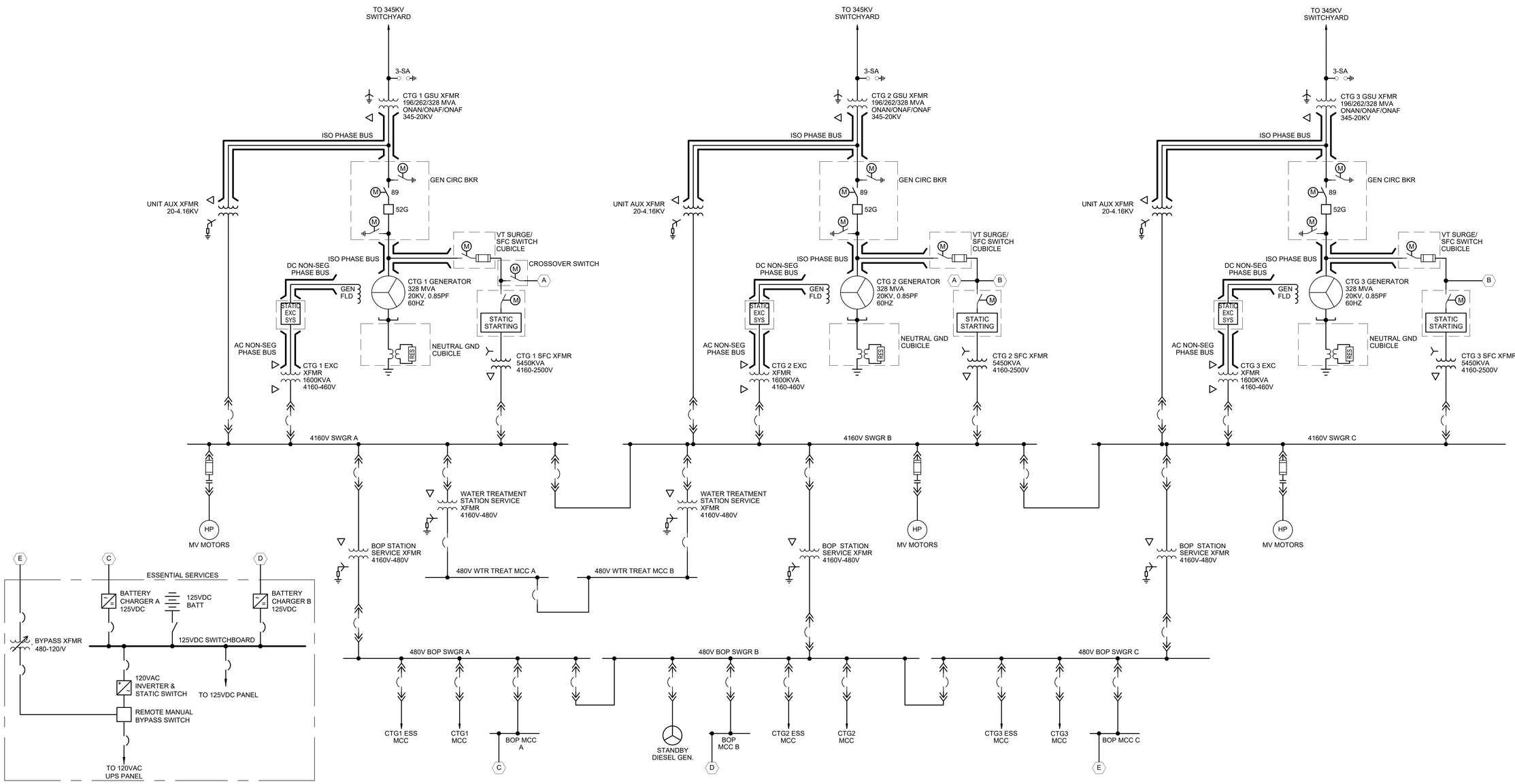
PHASE ROTATION

345kV NOTE 3

20kV

4.16KV

480V



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EAST KENTUCKY POWER COOPERATIVE

CLARK COUNTY, KENTUCKY

J.K. SMITH STATION
ONE-LINE DIAGRAM
5 X SC F-CLASS

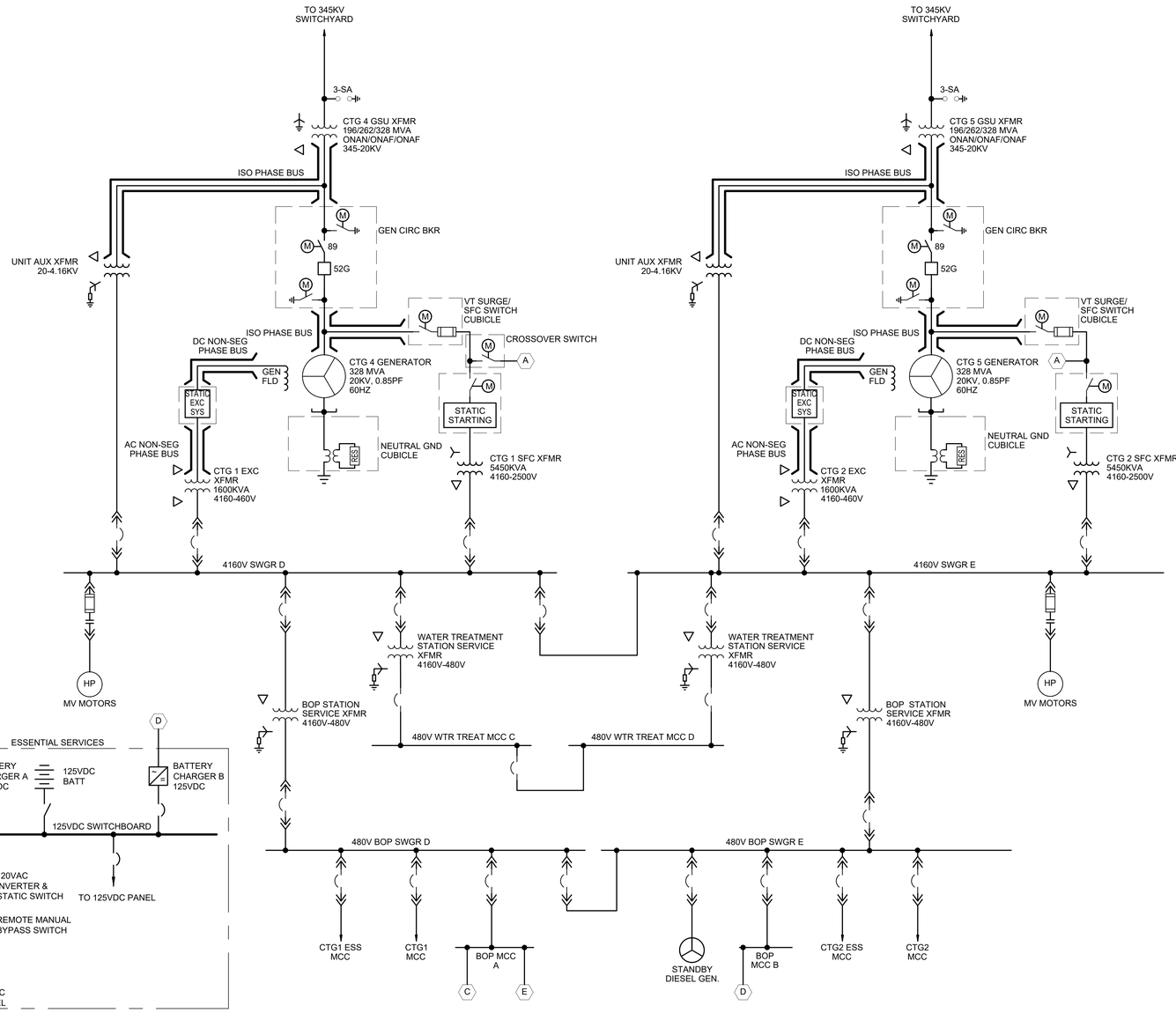
project 157785 | contract -

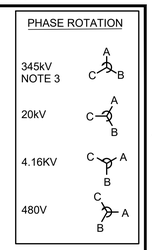
drawing **EE001** – rev. **A**

sheet 1 of 2 sheets

file 157785_EE001 SH1.dwg

Scale For Microfilming: Millimeters / Inches





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Firm Reg. No. 43

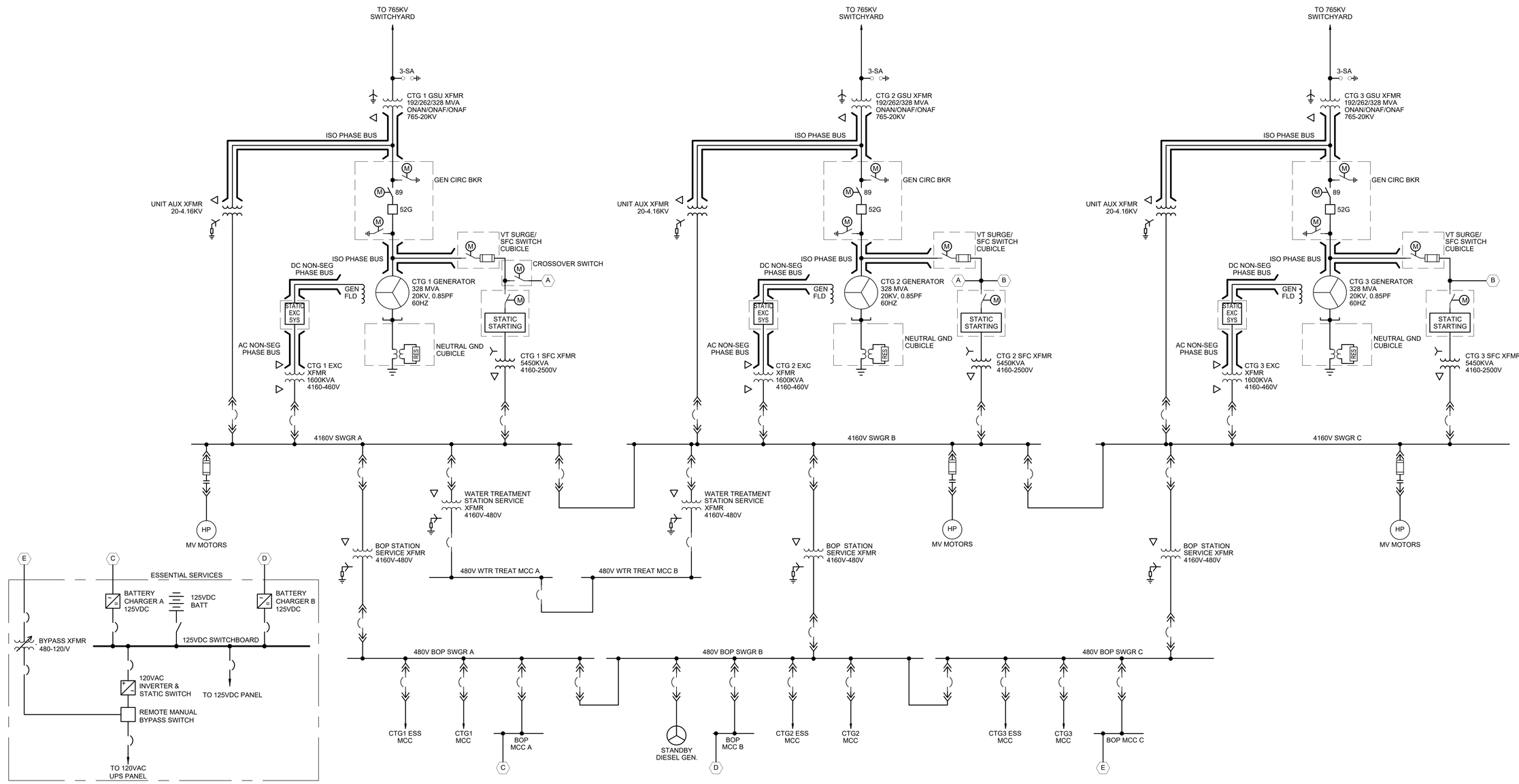
designed: B. OXANDALE
detailed: B. OXANDALE

EAST KENTUCKY POWER COOPERATIVE
CLARK COUNTY, KENTUCKY

J.K. SMITH STATION
ONE-LINE DIAGRAM
5 X SC F-CLASS

project: 157785
contract: -
drawing: EE001
rev.: A
sheet 2 of 2 sheets
file 157785_EE001 SH2.dwg

Millimeters
Scale For Microfilming
Inches



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Firm Reg. No. 43

designed: B. OXANDALE | detailed: B. OXANDALE

EAST KENTUCKY POWER COOPERATIVE

GREENUP COUNTY, KENTUCKY

TYGART CREEK STATION
ONE-LINE DIAGRAM
3 X SC F-CLASS

project: 157785 | contract: -

drawing: **EE005** | rev.: **A**

sheet | of | sheets

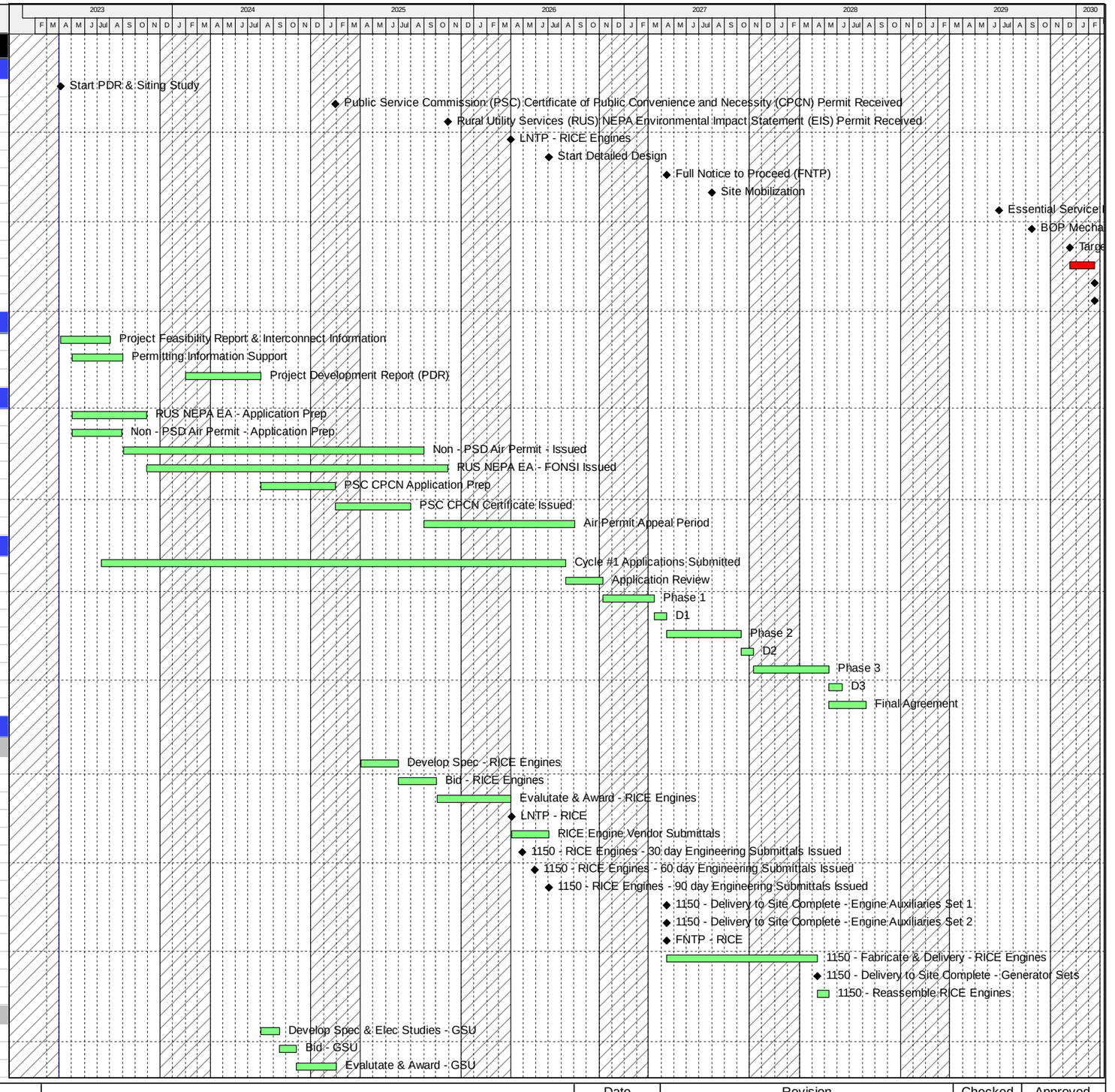
file 157785_EE005.dwg

Scale For Microfilming: Millimeters / Inches

APPENDIX F – PROJECT SCHEDULES

EKPC Generation Options - 12x18MW RICE

Activity ID	Activity Name	OD	Start	Finish	Total Float
Milestones					
A1950	Start PDR & Siting Study	0	03-Apr-23		120
MS.1030	Public Service Commission (PSC) Certificate of Public Convenience and Necessi	0		30-Jan-25	790
MS.1060	Rural Utility Services (RUS) NEPA Environmental Impact Statement (EIS) Permit I	0		29-Oct-25	701
MS.1220	LNTP - RICE Engines	0		01-Apr-26	37
A2050	Start Detailed Design	0	02-Jul-26		4
A2030	Full Notice to Proceed (FNTP)	0	13-Apr-27		119
MS.1020	Site Mobilization	0	02-Aug-27		156
MS.1120	Essential Service Power Available	0		27-Jun-29	0
MS.1050	BOP Mechanical Completion - Ready for RICE Commissioning	0		16-Sep-29	0
MS.1180	Target Provision Acceptance - RICE	0		17-Dec-29	0
MS.1190	Schedule Margin (calendar days)	60	18-Dec-29	15-Feb-30	0
MS.1200	Provisional Acceptance / Proposed COD	0		15-Feb-30	0
MS.1010	Public Service Commission (PSC) Air Permit Received	0		15-Feb-30	0
Project Development					
A1820	Project Feasibility Report & Interconnect Information	121	03-Apr-23	01-Aug-23	171
A1830	Permitting Information Support	88	01-May-23	01-Sep-23	487
A2140	Project Development Report (PDR)	183	01-Feb-24*	01-Aug-24	66
Permitting					
A1840	RUS NEPA EA - Application Prep	182	01-May-23	30-Oct-23	701
A1980	Non - PSD Air Permit - Application Prep	121	01-May-23	30-Aug-23	395
A2000	Non - PSD Air Permit - Issued	730	03-Sep-23	01-Sep-25	392
A2010	RUS NEPA EA - FONSI Issued	730	30-Oct-23	29-Oct-25	701
A1990	PSC CPCN Application Prep	182	02-Aug-24	30-Jan-25	790
A1890	PSC CPCN Certificate Issued	182	30-Jan-25	31-Jul-25	790
A2020	Air Permit Appeal Period	255	02-Sep-25	01-Sep-26	273
PJM Interconnect					
A2060	Cycle #1 Applications Submitted	784	12-Jul-23	11-Aug-26	119
A2070	Application Review	64	12-Aug-26	10-Nov-26	119
A2080	Phase 1	84	11-Nov-26	15-Mar-27	119
A2040	D1	21	15-Mar-27	13-Apr-27	119
A2090	Phase 2	126	13-Apr-27	11-Oct-27	385
A2100	D2	22	11-Oct-27	10-Nov-27	385
A2110	Phase 3	127	10-Nov-27	11-May-28	385
A2120	D3	21	11-May-28	12-Jun-28	427
A2130	Final Agreement	63	11-May-28	10-Aug-28	385
Up Front Procurement					
RICE Engines					
A1270	Develop Spec - RICE Engines	65	01-Apr-25*	01-Jul-25	27
A1150	Bid - RICE Engines	65	02-Jul-25	02-Oct-25	27
A1170	Evalutate & Award - RICE Engines	125	03-Oct-25	01-Apr-26	27
A2150	LNTP - RICE	0	02-Apr-26		27
A1160	RICE Engine Vendor Submittals	65	02-Apr-26	02-Jul-26	27
A1580	1150 - RICE Engines - 30 day Engineering Submittals Issued	0		29-Apr-26	70
A1850	1150 - RICE Engines - 60 day Engineering Submittals Issued	0		29-May-26	40
A1860	1150 - RICE Engines - 90 day Engineering Submittals Issued	0		02-Jul-26	357
A1590	1150 - Delivery to Site Complete - Engine Auxiliaries Set 1	0		13-Apr-27	402
A1870	1150 - Delivery to Site Complete - Engine Auxiliaries Set 2	0		13-Apr-27	447
A1900	FNTP - RICE	0	13-Apr-27		129
A1180	1150 - Fabricate & Delivery - RICE Engines	255	13-Apr-27	13-Apr-28	129
A1880	1150 - Delivery to Site Complete - Generator Sets	0		13-Apr-28	129
A1920	1150 - Reassemble RICE Engines	20	13-Apr-28	11-May-28	129
GSU					
A1770	Develop Spec & Elec Studies - GSU	30	02-Aug-24*	16-Sep-24	45
A1650	Bid - GSU	30	16-Sep-24	28-Oct-24	45
A1660	Evalutate & Award - GSU	65	28-Oct-24	31-Jan-25	45



Start Date	03-Apr-23
Finish Date	15-Feb-30
Data Date	01-Apr-23
Run Date	27-Jun-23

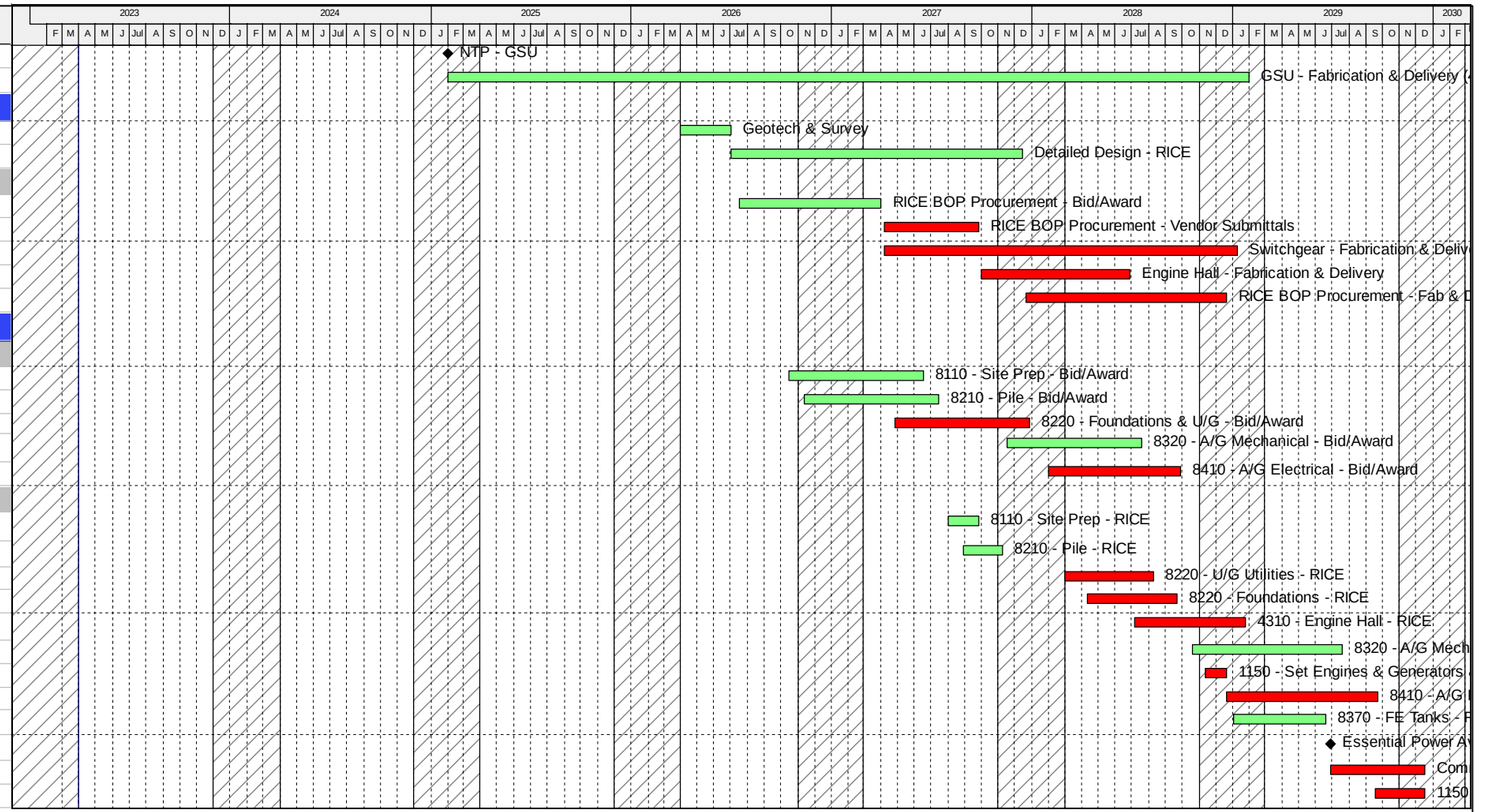
BURNS McDONNELL

EKPC Generation Options - 12x18MW RICE

Project Schedule

Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Total Float
A1670	NTP - GSU	0	31-Jan-25		45
A1100	GSU - Fabrication & Delivery (48M) 1015	1015	31-Jan-25	31-Jan-29	45
Detailed Design					
A1140	Geotech & Survey	65	01-Apr-26	01-Jul-26	4
A1130	Detailed Design - RICE	370	02-Jul-26	15-Dec-27	4
BOP Procurement					
A1120	RICE BOP Procurement - Bid/Award	180	17-Jul-26	01-Apr-27*	4
A2160	RICE BOP Procurement - Vendor Submittals	120	08-Apr-27	27-Sep-27	0
A1110	Switchgear - Fabrication & Delivery (21M)	445	08-Apr-27	09-Jan-29	0
A1090	Engine Hall - Fabrication & Delivery	190	30-Sep-27	28-Jun-28	0
A1190	RICE BOP Procurement - Fab & Deliver	255	22-Dec-27	21-Dec-28	0
Construction & Startup					
Construction Subcontracts					
A1230	8110 - Site Prep - Bid/Award	170	16-Oct-26	17-Jun-27	107
A2180	8210 - Pile - Bid/Award	170	13-Nov-26	16-Jul-27	107
A1200	8220 - Foundations & U/G - Bid/Award	170	26-Apr-27	27-Dec-27	0
A1210	8320 - A/G Mechanical - Bid/Award	170	16-Nov-27	18-Jul-28	15
A1220	8410 - A/G Electrical - Bid/Award	170	31-Jan-28	27-Sep-28	0
RICE Construction & Startup					
A1000	8110 - Site Prep - RICE	40	02-Aug-27*	27-Sep-27	107
A2170	8210 - Pile - RICE	50	30-Aug-27*	08-Nov-27	107
A1010	8220 - U/G Utilities - RICE	115	01-Mar-28*	10-Aug-28	0
A1020	8220 - Foundations - RICE	115	12-Apr-28	22-Sep-28	0
A1030	4310 - Engine Hall - RICE	140	07-Jul-28	25-Jan-29	0
A1060	8320 - A/G Mechanical - RICE	190	19-Oct-28	19-Jul-29	15
A1600	1150 - Set Engines & Generators & Connect Baseframes	28	13-Nov-28	21-Dec-28	0
A1070	8410 - A/G Electrical - RICE	190	22-Dec-28	21-Sep-29	0
A1080	8370 - FE Tanks - RICE	120	03-Jan-29	20-Jun-29	15
A1320	Essential Power Available - RICE	0	28-Jun-29		0
A2190	Commissioning - RICE	120	28-Jun-29	17-Dec-29	0
A1610	1150 - Engine Commissioning - RICE	65	17-Sep-29	17-Dec-29	0



Start Date	03-Apr-23
Finish Date	15-Feb-30
Data Date	01-Apr-23
Run Date	27-Jun-23

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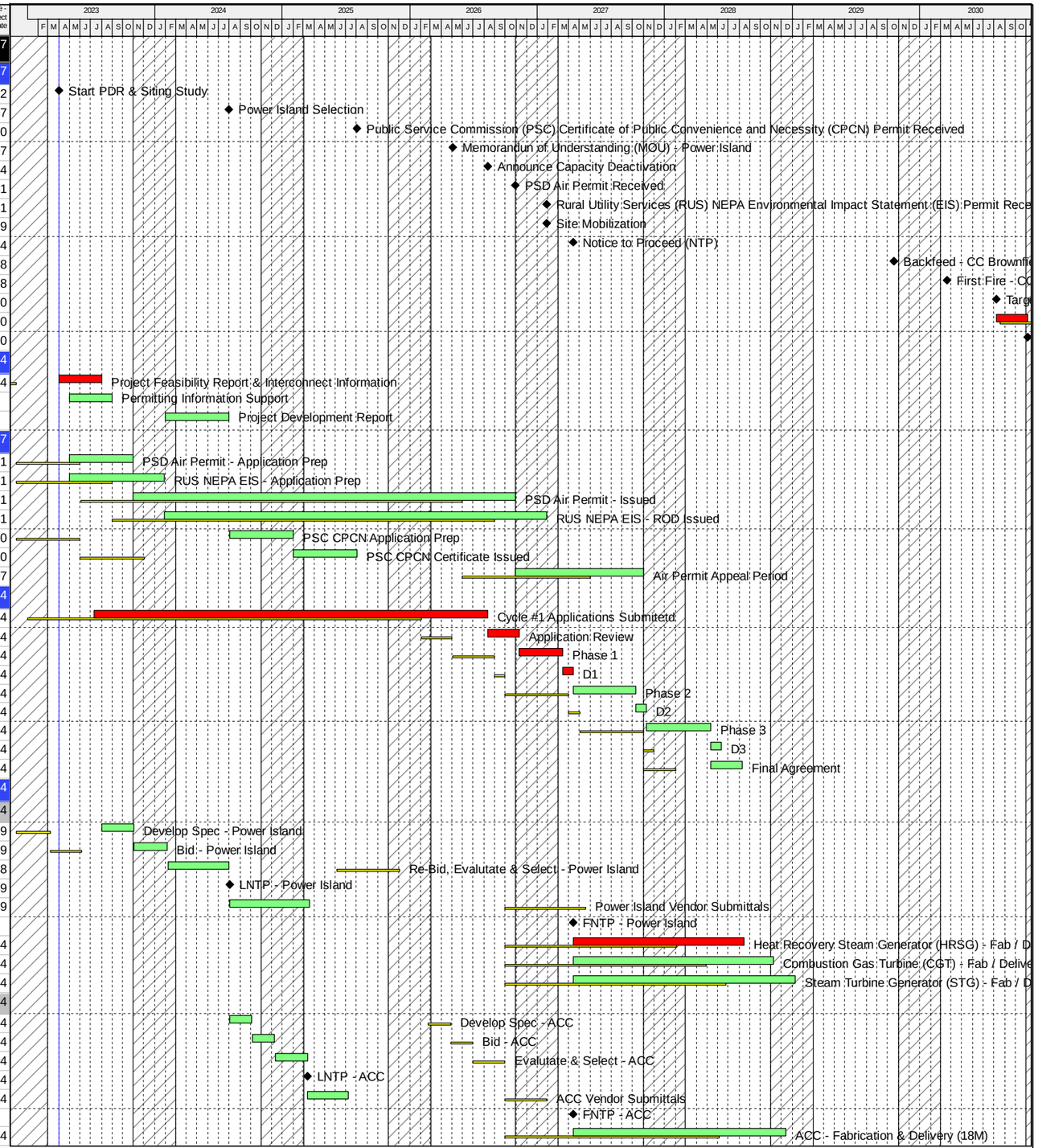
EKPC Generation Options - 12x18MW RICE

Project Schedule

Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Variance - BL Project Start Date	Variance - BL Project Finish Date
EKPC Generation Options - 2x1 CC F Class Brownfield		1931	01-Apr-23	07-Nov-30	-147	7
Milestones		1931	01-Apr-23	07-Nov-30	-147	7
MS.1040	Start PDR & Siting Study	0	01-Apr-23		-212	-212
MS.1000	Power Island Selection	0		01-Aug-24	487	487
MS.1030	Public Service Commission (PSC) Certificate of Public Convenience and Necessity (CPCN) F	0		02-Aug-25	-610	-610
A1990	Memorandun of Understanding (MOU) - Power Island	0	04-May-26		-107	-107
A2000	Announce Capacity Deactivation	0	12-Aug-26		-134	-134
MS.1010	PSD Air Permit Received	0		29-Oct-26	-151	-151
MS.1060	Rural Utility Services (RUS) NEPA Environmental Impact Statement (EIS) Permit Received	0		27-Jan-27	-151	-151
MS.1020	Site Mobilization	0	28-Jan-27		379	379
A1970	Notice to Proceed (NTP)	0	13-Apr-27		-134	-134
MS.1120	Backfeed - CC Brownfield	0		18-Oct-29	8	8
MS.1050	First Fire - CC Brownfield	0		20-Mar-30	8	8
MS.1180	Target Provision Acceptance - CC Brownfield	0		09-Aug-30	10	10
MS.1190	Schedule Margin (calendar days)	90	09-Aug-30	07-Nov-30	10	10
MS.1200	Provisional Acceptance / Proposed COD	0		07-Nov-30	10	10
Project Development		340	01-Apr-23	01-Aug-24	-147	-424
A1820	Project Feasibility Report & Interconnect Information	123	01-Apr-23	01-Aug-23	-212	-244
A1920	Permitting Information Support	88	01-May-23	01-Sep-23		
A1830	Project Development Report	129	01-Feb-24*	01-Aug-24		
Permitting		1145	01-May-23	01-Nov-27	-104	-107
A1860	PSD Air Permit - Application Prep	183	01-May-23	30-Oct-23	-151	-151
A1840	RUS NEPA EIS - Application Prep	273	01-May-23	28-Jan-24	-151	-151
A1870	PSD Air Permit - Issued	1095	30-Oct-23	29-Oct-26	-151	-151
A1850	RUS NEPA EIS - ROD Issued	1095	29-Jan-24	27-Jan-27	-151	-151
A1880	PSC CPCN Application Prep	182	02-Aug-24	31-Jan-25	-610	-610
A1890	PSC CPCN Certificate Issued	183	31-Jan-25	02-Aug-25	-610	-610
A1980	Air Permit Appeal Period	255	29-Oct-26	01-Nov-27	-107	-107
PJM Interconnect		1291	12-Jul-23	10-Aug-28	-134	-134
A2010	Cycle #1 Applications Submitetd	784	12-Jul-23	11-Aug-26	-134	-134
A2020	Application Review	64	12-Aug-26	10-Nov-26	-134	-134
A2030	Phase 1	84	11-Nov-26	15-Mar-27	-134	-134
A2040	D1	21	15-Mar-27	13-Apr-27	-134	-134
A2050	Phase 2	126	13-Apr-27	11-Oct-27	-134	-134
A2060	D2	22	11-Oct-27	10-Nov-27	-134	-134
A2070	Phase 3	127	10-Nov-27	11-May-28	-134	-134
A2080	D3	21	11-May-28	12-Jun-28	-134	-134
A2090	Final Agreement	63	11-May-28	10-Aug-28	-134	-134
Up Front Procurement		1395	02-Aug-23	30-Jan-29	-169	424
Power Island		1378	02-Aug-23	08-Jan-29	-169	-134
A1270	Develop Spec - Power Island	65	02-Aug-23	01-Nov-23	-169	-169
A1150	Bid - Power Island	65	02-Nov-23	06-Feb-24	-169	-169
A1170	Re-Bid, Evalutate & Select - Power Island	125	07-Feb-24	01-Aug-24	338	338
A1940	LNTP - Power Island	0	02-Aug-24		549	549
A1160	Power Island Vendor Submittals	160	02-Aug-24	20-Mar-25	549	549
A2100	FNTP - Power Island	0	13-Apr-27			
P.OEM.1050	Heat Recovery Steam Generator (HRSG) - Fab / Deliver (17M)	340	13-Apr-27	14-Aug-28	-134	-134
P.OEM.1060	Combustion Gas Turbine (CGT) - Fab / Deliver (20M)	400	13-Apr-27	07-Nov-28	-134	-134
P.OEM.1070	Steam Turbine Generator (STG) - Fab / Deliver (22M)	440	13-Apr-27	08-Jan-29	-134	-134
ACC		1108	02-Aug-24	13-Dec-28	394	-134
A1780	Develop Spec - ACC	45	02-Aug-24	04-Oct-24	394	394
A1790	Bid - ACC	45	07-Oct-24	09-Dec-24	394	394
A1800	Evalutate & Select - ACC	65	10-Dec-24	13-Mar-25	394	394
A1950	LNTP - ACC	0	14-Mar-25		394	394
A1810	ACC Vendor Submittals	80	14-Mar-25	07-Jul-25	394	394
A2110	FNTP - ACC	0	13-Apr-27			
A1090	ACC - Fabrication & Delivery (18M)	425	13-Apr-27	13-Dec-28	-134	-134



Start Date	01-Apr-23
Finish Date	07-Nov-30
Data Date	01-Apr-23
Run Date	19-Jun-23

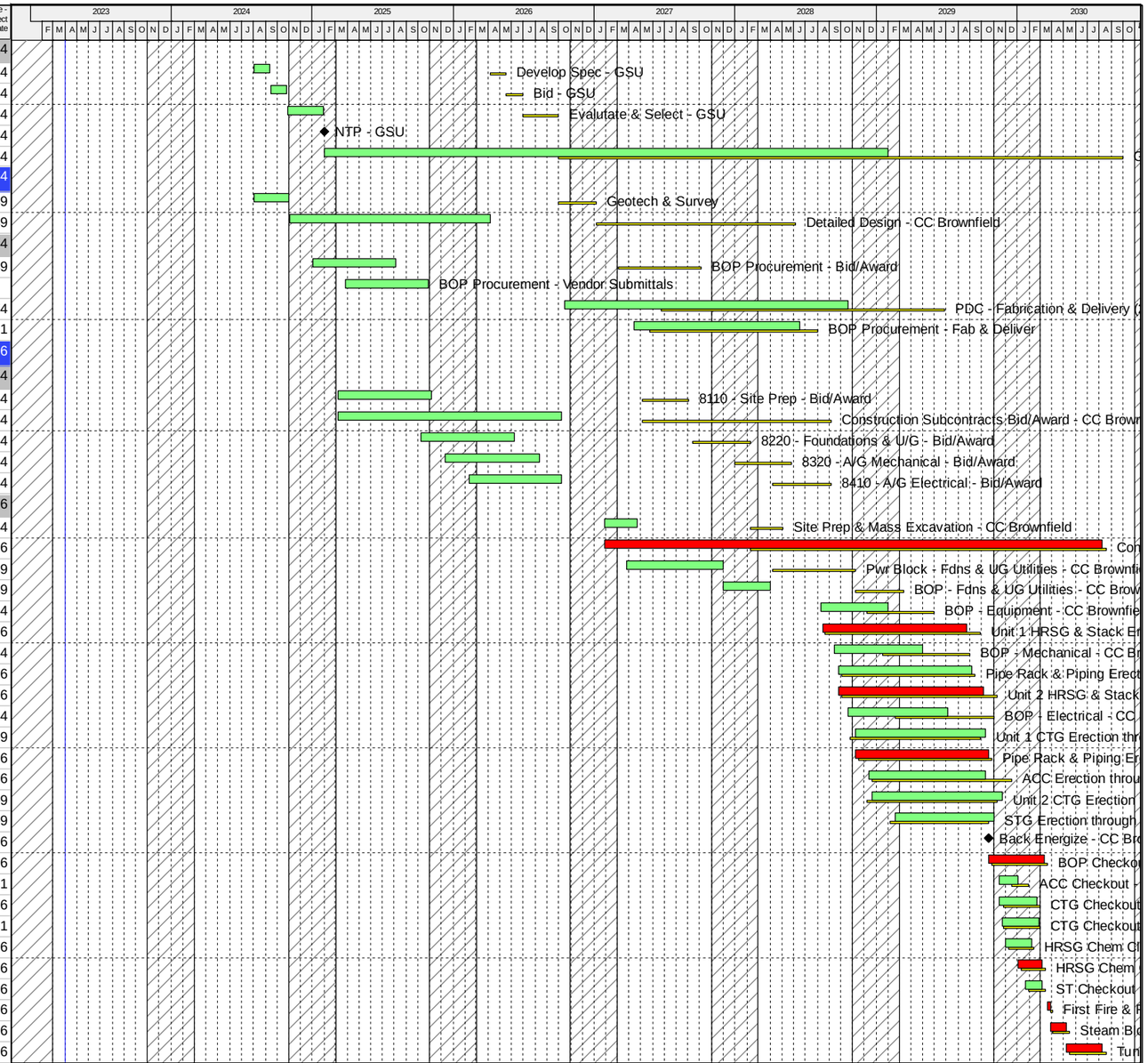
BURNS McDONNELL

EKPC Generation Options - 2x1 CC F Class Brownfield

Project Schedule

Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Variance - BL Project Start Date	Variance - BL Project Finish Date
GSU		1140	02-Aug-24	30-Jan-29	424	424
A1770	Develop Spec - GSU	30	02-Aug-24	13-Sep-24	424	424
A1650	Bid - GSU	30	16-Sep-24	25-Oct-24	424	424
A1660	Evalutate & Select - GSU	65	28-Oct-24	30-Jan-25	424	424
A1960	NTP - GSU	0	31-Jan-25		424	424
A1100	GSU - Fabrication & Delivery (48M)	1015	31-Jan-25	30-Jan-29	424	424
Detailed Design		1070	02-Aug-24	18-Oct-28	549	174
A1140	Geotech & Survey	65	02-Aug-24	01-Nov-24	549	549
A1360	Detailed Design - CC Brownfield	360	04-Nov-24	06-Apr-26	549	549
BOP Procurement		965	03-Jan-25	18-Oct-28	549	174
A1120	BOP Procurement - Bid/Award	150	03-Jan-25	04-Aug-25	549	549
A2120	BOP Procurement - Vendor Submittals	150	28-Mar-25	28-Oct-25		
A1110	PDC - Fabrication & Delivery (24M)	510	16-Oct-26	18-Oct-28	174	174
A1190	BOP Procurement - Fab & Deliver	300	13-Apr-27	16-Jun-28	31	31
Construction & Startup		1378	07-Mar-25	09-Aug-30	549	6
Construction Subcontracts		405	07-Mar-25	08-Oct-26	549	484
A1230	8110 - Site Prep - Bid/Award	170	07-Mar-25	04-Nov-25	549	464
A1910	Construction Subcontracts Bid/Award - CC Brownfield	405	07-Mar-25	08-Oct-26	549	484
A1200	8220 - Foundations & U/G - Bid/Award	170	08-Oct-25	09-Jun-26	489	424
A1210	8320 - A/G Mechanical - Bid/Award	170	11-Dec-25	12-Aug-26	519	454
A1220	8410 - A/G Electrical - Bid/Award	170	10-Feb-26	08-Oct-26	549	484
CC Construction & Startup		898	28-Jan-27	09-Aug-30	264	6
CN.GEN.31	Site Prep & Mass Excavation - CC Brownfield	60	28-Jan-27	21-Apr-27	264	264
A1900	Construction & Startup - CC Brownfield	898	28-Jan-27	09-Aug-30	264	6
CN.PWR.10	Pwr Block - Fdns & UG Utilities - CC Brownfield	175	25-Mar-27	30-Nov-27	264	239
CN.BOP.100	BOP - Fdns & UG Utilities - CC Brownfield	85	01-Dec-27	31-Mar-28	239	239
CN.BOP.102	BOP - Equipment - CC Brownfield	120	09-Aug-28	30-Jan-29	84	84
CN.PWR.10	Unit 1 HRSG & Stack Erection through Hydro - CC Brownfield	260	14-Aug-28	22-Aug-29	6	26
CN.BOP.103	BOP - Mechanical - CC Brownfield	160	14-Sep-28	01-May-29	84	84
CN.PWR.10	Pipe Rack & Piping Erection - CC Brownfield	240	26-Sep-28	06-Sep-29	6	6
CN.PWR.10	Unit 2 HRSG & Stack Erection through Hydro - CC Brownfield	260	26-Sep-28	04-Oct-29	6	26
CN.BOP.104	BOP - Electrical - CC Brownfield	180	19-Oct-28	05-Jul-29	84	84
CN.PWR.10	Unit 1 CTG Erection through LO Flush - CC Brownfield	235	07-Nov-28	11-Oct-29	-9	-9
CN.PWR.10	Pipe Rack & Piping Erection - CC Brownfield	240	07-Nov-28	18-Oct-29	6	6
CN.BOP.101	ACC Erection through Pneumatic Testing - CC Brownfield	210	13-Dec-28	11-Oct-29	6	46
CN.PWR.10	Unit 2 CTG Erection through LO Flush - CC Brownfield	235	20-Dec-28	23-Nov-29	-9	-9
CN.PWR.10	STG Erection through LO Flush - CC Brownfield	180	19-Feb-29	01-Nov-29	-9	-9
SU.1000	Back Energize - CC Brownfield	0		18-Oct-29	6	6
SU.1010	BOP Checkout - CC Brownfield	100	18-Oct-29	13-Mar-30	6	6
SU.1020	ACC Checkout - CC Brownfield	30	15-Nov-29	02-Jan-30	21	21
SU.1040	CTG Checkout - CC Brownfield	65	15-Nov-29	20-Feb-30	6	6
SU.1100	CTG Checkout - CC Brownfield	65	23-Nov-29	27-Feb-30	1	1
SU.1030	HRSG Chem Clean, Restore, & Recirculate - CC Brownfield	45	30-Nov-29	06-Feb-30	6	6
SU.1090	HRSG Chem Clean, Restore, & Recirculate - CC Brownfield	45	02-Jan-30	06-Mar-30	6	6
SU.1050	ST Checkout - CC Brownfield	30	23-Jan-30	06-Mar-30	6	6
SU.1060	First Fire & Rough Tuning - CC Brownfield	5	20-Mar-30	27-Mar-30	6	6
SU.1070	Steam Blow to STG Sync - CC Brownfield	30	27-Mar-30	08-May-30	6	6
SU.1080	Tuning & Testing - CC Brownfield	65	08-May-30	09-Aug-30	6	6



Start Date	01-Apr-23
Finish Date	07-Nov-30
Data Date	01-Apr-23
Run Date	19-Jun-23

BURNS McDONNELL

EKPC Generation Options - 2x1 CC F Class Brownfield

Project Schedule

Date	Revision	Checked	Approved

APPENDIX G – PERFORMANCE AND EMISSIONS

Title:	Indicative emissions US projects 18V50DF-D	**Doc.ID:**	DBAD556996
		Revision:	h
Author:	RAUDASKOSKI, RIITTA (RRA023)	**Status:**	Approved
Approved by:	Raudaskoski, Riitta/2/28/2023	**Pages:**	1 (2)
Organisation:	ENERGY BUSINESS (WÄRTSILÄ CORPORATION)		

This document provides indicative stack emissions at steady state operation conditions for one Wärtsilä 18V50DF-D (60Hz/514 rpm, pipeline natural gas/ultra-low sulphur diesel, high MN, ambient conditions according to ISO 3046) engine equipped with an efficient emission control system. Emission control system includes a selective catalytic reduction system and an oxidation catalyst. The estimates are for US new build projects only. The figures are indicative and **shall under no circumstances be considered guarantee data**.

Natural gas operation (pilot fuel ultra-low sulphur diesel (Sulphur content of <0.0015 wt %))

		100% engine load	75% engine load	50% engine load	40% engine load
NO_X (as NO_2)	ppm-v, 15 % O_2, dry	6	6	9	9
CO	ppm-v, 15 % O_2, dry	15	15	15	15
VOC (as CH_4) Note 2	ppm-v, 15 % O_2, dry	26	26	37	42
VOC (as C_3H_8) Note 2	ppm-v, 15 % O_2, dry	8.67	8.67	12.33	14
CH_2O	ppm-v, 15 % O_2, dry	0.7	0.9	1.3	1.6
NH_3	ppm-v, 15 % O_2, dry	10	10	10	10
PM10 (total)	mg/Nm^3, 15% O_2, dry Note 1	15	15	20	20
NO_X (as NO_2)	lb/h	3.19	2.48	2.57	2.11
CO	lb/h	4.85	3.78	2.61	2.14
VOC (as CH_4) Note 2	lb/h	4.81	3.75	3.68	3.44
VOC (as C_3H_8) Note 2	lb/h	4.41	3.44	3.37	3.15
CH_2O	lb/h	0.243	0.243	0.243	0.243
NH_3	lb/h	1.97	1.53	1.06	0.87
PM10 (total)	lb/h	3.88	3.02	2.78	2.29

Note 1. Nm^3 defined at 0 °C and 101.3 kPa (abs)

Note 2. The VOC concentration of the flue gas in the stack is dependent on the composition of the natural gas. Emission values in the table above are valid for fuel gas with max. VOC concentration (sum of propane + butane + pentane + hexane) 0.5 vol-%. If the concentration (sum of propane + butane + pentane + hexane) in the feed natural gas exceeds 0.5 vol-%, the VOC emissions shall be corrected according to the table below. In the table the sum of propane + butane + pentane+ hexane is denoted C_{GasVOC}.

	Factor for VOC correction
Actual feed gas C_{GasVOC}	**VOC number guarantee * factor**
0 vol-% ≤ C_{GasVOC} < 0.50 vol-%	1.0
0.50 vol-% ≤ C_{GasVOC} < 1.00 vol-%	1.3
1.00 vol-% ≤ C_{GasVOC} < 1.50 vol-%	1.6

Back-up fuel operation (ultra-low sulphur diesel (Sulphur content of <0.0015 wt %))

		100% engine load	75% engine load	50% engine load	40% engine load
NO_X (as NO_2)	ppm-v, 15 % O_2, dry	35	35	40	40
CO	ppm-v, 15 % O_2, dry	20	20	20	20
VOC (as CH_4)	ppm-v, 15 % O_2, dry	40	40	40	40
VOC (as C_3H_8)	ppm-v, 15 % O_2, dry	13.33	13.33	13.33	13.33
NH_3	ppm-v, 15 % O_2, dry	10	10	10	10
PM10 (total)	mg/Nm^3, 15% O_2, dry	20	20	30	30
PM (dry)	mg/Nm^3, 15% O_2, dry Note 1	15	15	25	25
NO_X (as NO_2)	lb/h	20.10	15.08	11.92	10.01
CO	lb/h	6.99	5.25	3.63	3.05
VOC (as CH_4)	lb/h	8.01	6.01	4.16	3.49
VOC (as C_3H_8)	lb/h	7.34	5.50	3.81	3.20
NH_3	lb/h	2.13	1.59	1.10	0.93
PM10 (total)	lb/h	5.60	4.20	4.35	3.66
PM (dry)	lb/h	4.20	3.15	3.63	3.05

Note 1. Nm^3 defined at 0 °C and 101.3 kPa (abs)

SIEMENS energy

EKPC - Smith

2x1 SCC6-5000F - Estimated Exhaust Stack Emissions
Combined Cycle with ULN Combustor

Estimated Emissions Data Sheet
June 21, 2023

SITE CONDITIONS:	**CASE 1**	**CASE 2**	**CASE 3**	**CASE 4**	**CASE 5**	**CASE 6**	**CASE 7**	**CASE 8**	**CASE 9**	**CASE 10**	**CASE 11**	**CASE 12**	**CASE 13**	**CASE 14**
FUEL TYPE	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas
GT LOAD LEVEL	100%	75%	50%	36%	100%	75%	50%	32%	100%	75%	100%	72%	48%	34%
NET FUEL HEATING VALUE, Btu/lb_m (LHV)	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680
GROSS FUEL HEATING VALUE, Btu/lb_m (HHV)	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913	22,913
EVAPORATIVE COOLER STATUS	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
AMBIENT DRY BULB TEMPERATURE, °F	11	11	11	11	59	59	59	59	59	59	85	85	85	85
AMBIENT RELATIVE HUMIDITY, %	70	70	70	70	60	60	60	60	60	60	65	65	65	65
BAROMETRIC PRESSURE, psi_a	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281	14.281
GT FUEL FLOW, lb_m/hr	107,459	87,591	67,741	56,605	108,679	87,194	67,384	52,464	108,061	87,275	104,488	82,001	63,556	52,283
GT HEAT INPUT, MMBtu/hr (HHV)	2,462	2,007	1,552	1,297	2,490	1,998	1,544	1,202	2,476	2,000	2,394	1,879	1,456	1,198
GT EMISSIONS (Based on USEPA Test Methods):														
NO_X, ppmvd @ 15% O_2	15	15	15	15	15	15	15	15	15	15	15	15	15	15
NO_X, lb_m/hr as NO_2	138	112	86.2	71.8	140	112	85.8	66.6	139	112	134	105	81.1	66.5
CO, ppmvd @ 15% O_2	4	4	9	9	4	4	9	9	4	4	4	4	9	9
CO, lb_m/hr	22.4	18.2	31.5	26.2	22.7	18.1	31.3	24.3	22.5	18.1	21.8	17.1	29.6	24.3
STACK EXHAUST GAS														
EXHAUST FLOW, lb_m/hr	4,547,062	3,784,972	3,162,594	2,784,942	4,687,542	3,700,617	3,083,186	2,583,812	4,617,463	3,704,759	4,480,586	3,528,162	2,940,996	2,561,551
STACK TEMPERATURE, °F	201	191	184	180	206	188	180	173	204	189	212	196	188	182
OXYGEN, Vol. %	12.05	12.27	12.94	13.36	12.07	11.96	12.62	13.22	11.94	11.92	11.67	11.79	12.41	12.87
CARBON DIOXIDE, Vol. %	4.14	4.04	3.73	3.54	4.05	4.10	3.80	3.52	4.09	4.10	4.05	4.03	3.74	3.52
WATER, Vol. %	8.02	7.83	7.24	6.87	8.68	8.77	8.19	7.67	8.98	9.00	10.58	10.24	9.69	9.29
NITROGEN, Vol. %	74.89	74.97	75.20	75.34	74.31	74.28	74.50	74.71	74.10	74.10	72.83	73.08	73.29	73.44
ARGON, Vol. %	0.89	0.89	0.90	0.90	0.88	0.88	0.89	0.89	0.88	0.88	0.87	0.87	0.87	0.87
MOLECULAR WEIGHT	28.46	28.47	28.51	28.53	28.38	28.37	28.41	28.44	28.35	28.35	28.17	28.21	28.24	28.27
STACK EMISSIONS (Based on USEPA Test Methods):														
NO_X, ppmvd @ 15% O_2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
NO_X, lb_m/hr as NO_2	18.4	14.9	11.5	9.6	18.6	14.9	11.4	8.9	18.5	14.9	17.9	14.0	10.8	8.9
NH_3, ppmvd @ 15% O_2	10	10	10	10	10	10	10	10	10	10	10	10	10	10
NH_3, lb_m/hr	34.1	27.7	21.3	17.7	34.5	27.5	21.2	16.4	34.3	27.6	33.2	25.9	20.0	16.4
CO, ppmvd @ 15% O_2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CO, lb_m/hr	11.2	9.1	7.0	5.8	11.3	9.1	7.0	5.4	11.3	9.1	10.9	8.5	6.6	5.4
VOC, ppmvd @ 15% O_2 as CH_4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
VOC, lb_m/hr as CH_4	3.2	2.6	2.0	1.7	3.2	2.6	2.0	1.5	3.2	2.6	3.1	2.4	1.9	1.5
UHC, ppmvd @ 15% O_2 as CH_4	2	2	2	2	2	2	2	2	2	2	2	2	2	2
UHC, lb_m/hr as CH_4	6.4	5.2	4.0	3.3	6.5	5.2	4.0	3.1	6.5	5.2	6.3	4.9	3.8	3.1
Particulate Matter (PM_{10} or $PM_{2.5}$), lb_m/hr	10.0	8.3	7.0	6.1	10.3	8.1	6.8	5.7	10.1	8.1	9.7	7.6	6.4	5.6
CO_2, lb_m/hr	301,500	245,754	190,061	158,818	304,923	244,641	189,061	147,198	303,189	244,868	293,163	230,072	178,319	146,691

NOTES:

- All data is ESTIMATED, NOT guaranteed and is for ONE unit.
- Fuel gas composition, by moles, is: 89.633% CH_4, 8.289% C_2H_6, 0.348% C_3H_8, 0.006% i-C_4H_{10}, 0.011% n-C_4H_{10}, 0.001% i-C_5H_{12}, 0.001% n-C_5H_{12}, 1.323% N_2, 0.388% CO_2, and assumes 0.2 grains S/100 SCF.
- Gas fuel must be in compliance with the Siemens Gas Fuel Specification.
- NO_X and CO /VOC based on the use of Low Load CO hardware (LLCO) for Cases 4, 8, and 14.
- Stack NO_X and CO assume the use of an SCR and oxidation catalyst, respectively.
- VOC consist of total hydrocarbons excluding methane and ethane and are expressed in terms of methane (CH_4).
- Particulates are per US EPA Method 5 and 202 (front and back half), and consist of either all PM_{10} or all $PM_{2.5}$ (one or the other, the difference cannot be accurately determined, and the values given are not additive).
- CO_2 is calcualted based on 40CFR75 Appendix G, Equation G-4, with the standard F_c value of 1,040.
- Emissions exclude ambient air contributions and assume steady-state conditions.
- Please be advised that the information contained in this transmittal has been prepared and is being transmitted per customer request specifically for information purposes only.
  Data included in any permit application or Environmental Impact Statement are strictly the customer's responsibility. Siemens Energy is available to review permit application data upon request.

Siemens 5000F Gas Turbine Performance and Emissions

GTG Performance Data Sheet
F-Class Turbine

		Case #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ambient Dry Bulb Temperature	F		11.0	11.0	11.0	11.0	59.0	59.0	59.0	59.0	59.0	59.0	85.0	85.0	85.0	85.0
Ambient Relative Humidity	%		70%	70%	70%	70%	60%	60%	60%	60%	60%	60%	65%	65%	65%	65%
Ambient Wet Bulb Temperature	F		9.4	9.4	9.4	9.4	51.4	51.4	51.4	51.4	51.4	51.4	75.4	75.4	75.4	75.4
Altitude	ft		790	790	790	790	790	790	790	790	790	790	790	790	790	790
Ambient Pressure	psia		14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28	14.28
Inlet Conditioning Operating Status			OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
Evaporative Cooler Effectiveness			90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Inlet Loss	in H2O		3.2	2.3	1.6	1.2	3.8	2.4	1.7	1.2	3.6	2.3	3.6	2.3	1.6	1.2
FUEL GAS ANALYSIS																
CH4	Mol %		89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%	89.633%
C2H6	Mol %		8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%	8.289%
C3H8	Mol %		0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%	0.348%
i-C4H10	Mol %		0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%	0.006%
n-C4H10	Mol %		0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%	0.011%
i-C5H12	Mol %		0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%
n-C5H12	Mol %		0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%
n-C6H14	Mol %		0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
N2	Mol %		1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%	1.323%
CO2	Mol %		0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%	0.388%
Total Sulfur (Maximum)	grain/100 SCF		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV (Btu/lb)	Btu/lbm		20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680	20,680
GAS TURBINE PERFORMANCE (per GTG)																
Gas Turbine Load	%		100%	75%	50%	MECL	100%	75%	50%	MECL	100%	75%	100%	75%	50%	MECL
Gas Turbine Gross Electrical Output	kW		265464	198531	131472	95793	265401	198479	131424	84787	265411	198482	249744	179274	118575	84116
Gas Turbine Auxiliary Load	kW		120	120	120	120	120	120	120	120	120	120	120	120	120	120
Gas Turbine Net Electrical Output	kW		265344	198411	131352	95673	265281	198359	131304	84667	265291	198362	249624	179154	118455	83996
Gas Turbine Fuel Input (LHV)	MMBtu/hr		2,231	1,814	1,404	1,174	2,255	1,803	1,396	1,087	2,242	1,805	2,158	1,686	1,308	1,077
Fuel Gas Temperature	F		440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0
Gas Turbine Gross Heat Rate (LHV)	Btu/kWh		5,849	6,039	6,476	6,866	5,786	5,915	6,331	6,828	5,775	5,933	5,781	5,964	6,384	6,773
Gas Turbine Net Heat Rate (LHV)	Btu/kWh		5,852	6,043	6,483	6,874	5,789	5,919	6,338	6,838	5,779	5,937	5,784	5,968	6,391	6,782
System Power Factor			0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
GAS TURBINE EXHAUST CONDITIONS @ GAS TURBINE EXHAUST FLANGE																
Gas Turbine Exhaust Loss (total)	inH2O		20.9	15.0	10.6	8.2	22.5	14.8	10.4	7.3	21.8	14.7	20.9	13.6	9.6	7.3
Gas Turbine Exhaust Loss (static)	inH2O		Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts	Typical 3-Pressure HRSG w/ CO & SCR Catalysts
CTG Exhaust Flow	lb/hr		4549029	3786613	3163981	2786163	4685007	3698616	3081525	2582427	4615608	3703270	4478250	3526357	2939501	2560442
CTG Exhaust Temperature	F		1104	1129	1129	1129	1125	1180	1180	1180	1124	1173	1144	1198	1198	1198
Exhaust Gas Specific Heat	Btu/lbm/F															
Exhaust Energy	MMBtu/hr															
Gas Turbine Exhaust Gas Analysis																
CTG Exhaust Argon	%wt		0.89	0.89	0.90	0.90	0.88	0.88	0.89	0.89	0.88	0.88	0.87	0.87	0.87	0.87
CTG Exhaust Nitrogen	%wt		74.9	75.0	75.2	75.3	74.3	74.3	74.5	74.7	74.1	74.1	72.8	73.1	73.3	73.4
CTG Exhaust Oxygen	%wt		12.1	12.3	12.9	13.4	12.1	12.0	12.6	13.2	11.9	11.9	11.7	11.8	12.4	12.9
CTG Exhaust Carbon Dioxide	%wt		4.1	4.0	3.7	3.5	4.1	4.1	3.8	3.5	4.1	4.1	4.1	4.0	3.7	3.5
CTG Exhaust H2O	%wt		8.0	7.8	7.2	6.9	8.7	8.8	8.2	7.7	9.0	9.0	10.6	10.2	9.7	9.3
Exhaust Gas Molecular Weight	%wt		28.5	28.5	28.5	28.5	28.4	28.4	28.4	28.4	28.4	28.3	28.2	28.2	28.2	28.3
Gas Turbine Exhaust Emissions (per GTG, Corrected to 15% O2)																
CO @ 15% O2	ppmvd		4	4	9	9	4	4	9	9	4	4	4	4	9	9
NOx @ 15% O2	ppmvd		15	15	15	15	15	15	15	15	15	15	15	15	15	15
VOC @ 15% O2	ppmvd		1	1	1	1	1	1	1	1	1	1	1	1	1	1
UHC @ 15% O2	ppmvd		2	2	2	2	2	2	2	2	2	2	2	2	2	2
PM10 or PM2.5 (front and back half)	lb/hr		9.7	8.1	6.8	6.0	9.9	7.8	6.5	5.5	9.8	7.8	9.4	7.4	6.2	5.4
CO2 Emissions	lb/hr		302629	246062	190472	159270	305906	244670	189265	147512	304189	244951	292719	226812	177525	146185

APPENDIX H – CAPITAL COST ESTIMATES

CLASS 4 CAPITAL COST ESTIMATE
EKPC
OPTION SUMMARY

KENTUCKY
BMcD #157787

Acct	Area / Discipline	214 MW RICE Liberty	Total Cost 3x SCGT Tygarts Creek	5x SCGT Smith	2x1 CCGT Cooper	2x1 CCGT Smith	3x1 CCGT Tygarts Creek
	Total Direct Cost	**$301,000,000**	**$360,000,000**	**$668,000,000**	**$681,000,000**	**$725,000,000**	**$1,016,000,000**
	Engineering, CM/CI and Startup	$48,000,000	$90,000,000	$130,000,000	$148,000,000	$175,000,000	$210,000,000
	Total Indirect Cost	**$48,000,000**	**$96,000,000**	**$130,000,000**	**$148,000,000**	**$175,000,000**	**$210,000,000**
	Total Direct and Indirect Costs	**$349,000,000**	**$456,000,000**	**$798,000,000**	**$829,000,000**	**$900,000,000**	**$1,226,000,000**
	Contingency and Escalation	$92,000,000	$217,000,000	$377,000,000	$409,000,000	$441,000,000	$593,000,000
	Total Project Cost	**$441,000,000**	**$673,000,000**	**$1,175,000,000**	**$1,238,000,000**	**$1,341,000,000**	**$1,819,000,000**
	Owner Cost - General, Taxes & Fees	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
	Owner Cost - Builders Risk Insurance	$9,000,000	$12,080,000	$21,000,000	$11,000,000	$25,000,000	$33,000,000
	Owner Cost - Transmission	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
	Owner Cost - Gas Line	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
	Owner Cost - Land Acquisition	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
	Owner Cost - Fuel	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
	Owner Cost - Demolition Allownace	Excluded	Excluded	$4,000,000	$4,000,000	$4,000,000	Excluded
	Owner Cost - Owner Contingency	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
	Total Project Cost Incl. Owner Cost	**$450,000,000**	**$685,080,000**	**$1,200,000,000**	**$1,253,000,000**	**$1,370,000,000**	**$1,852,000,000**
	Including Escalation **$/KW**	**$2,083**	**$993**	**$1,091**	**$1,728**	**$1,851**	**$1,684**
Revision 0 - 08/01/23	No Escalation **$/KW**	**$1,819**	**$752**	**$830**	**$1,299**	**$1,401**	**$1,275**