

TECHNICAL SCOPE DOCUMENT

Presented To:

Electricidad de Caracas

For

**The Turnkey Installation
Of (2) LM2500 PE GTG's
& Balance of Plant
at TACOA**

By



Proposal No. T-9003A
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EDC**

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Section 1.0 Introduction

EDC desires to build a 40 MW dual fuel generating facility installed and operational within the schedule agreed upon. ProEnergy EPC Services proposes to install (2) Owner Finished GE LM2500 PE Gas Turbine Generators including additional auxiliary and balance of plant equipment as described in Sections 2 & 3.

In addition to the installation of the Owner furnished equipment, Contractor will also supply certain other balance of plant equipment as described in Sections 2 & 3

This Turnkey EPC Proposal assumes that ProEnergy will be providing O&M Services for this plant.

THIS DOCUMENT IS CONFIDENTIAL. IT IS DESIGNED AND INTENDED FOR ELECTRICIDAD DE CARACAS' USE. THIS DOCUMENT IS FOR THE SOLE PURPOSE OF EVALUATING PROENERGY EPC SERVICES' PROPOSAL FOR THE LM2500 POWER PLANT.

Section 2.0 Scope of Work and Supply

The Scope of Work and Supply is comprised of the following outlined items:

Major Generation Equipment

Installation of two (2) Owner Supplied GE LM2500 PE gas turbine generator packages complete with auxiliary skids, modular control rooms, inlet filters and exhaust stacks.

GE interface points are as follows:

| Equipment System | Limits of GE Package |
|--|---|
| <ul style="list-style-type: none"> All supply piping, including Fuel Gas, Liquid Fuel, Demineralized Water, Lube Oil, Compressed Air, Instrument Air, Hydraulic Start Oil | <ul style="list-style-type: none"> Flanged or threaded connection on GE Package base plates. |
| <ul style="list-style-type: none"> Inlet Air-to-Filter | <ul style="list-style-type: none"> Atmosphere |
| <ul style="list-style-type: none"> Turbine/Generator Ventilation Air | <ul style="list-style-type: none"> Atmosphere |
| <ul style="list-style-type: none"> Turbine Exhaust | <ul style="list-style-type: none"> Flange & Expansion Joint for connection to Exhaust Stack or SCR |
| <ul style="list-style-type: none"> Instruments on GE Package Base plate | <ul style="list-style-type: none"> Terminal box on base plate |
| <ul style="list-style-type: none"> Instrument wiring in Turbine Control Panel | <ul style="list-style-type: none"> Terminal in Turbine Control Panel |
| <ul style="list-style-type: none"> High Voltage Connections | <ul style="list-style-type: none"> Bus bar in GE Package generator line side cubicle |
| <ul style="list-style-type: none"> Generator Ground Connections | <ul style="list-style-type: none"> GE Package Neutral cubicle |
| <ul style="list-style-type: none"> Electric Motors | <ul style="list-style-type: none"> Terminal box on individual motors |
| <ul style="list-style-type: none"> Ladders and Platforms for Air Filter | <ul style="list-style-type: none"> Ladders and Platforms for Inlet Air Filter and Vent Fans |

2.0 Balance of Plant

The contractor will design and install the facility as described in the following sections of this document. The design assumes that certain facilities that have been provided in the adjacent 2 x LM6000 PC Plant will also serve this 2 x LM2500 Plant and includes the necessary Structural, Mechanical, Electrical, Instrumentation, and control System to install the above Major Equipment.

The Balance of Plant scope of supply will be comprised of the following:

- Contractor will provide complete design of the facility including civil, structural, buildings, mechanical, electrical, instrumentation and control.
- Contractor will provide concrete foundations, plant gravel, fencing and security gate.
- Owner will provide a reasonably level graded site.
- Owner will provide access roads to the site.
- Contractor will provide Installation of the complete Power Plant with the inter-ties as described later in this document and including:
 - Mechanical installation of the various items of equipment with the associated inter-ties of Demin water, natural gas fuel, liquid fuel, sanitary sewer, and waste water.
 - Electrical installation of the plant including a 13.8 KV feed to (2) existing GSU Transformers, area lighting, grounding, lightning protection, and cathodic protection.
 - Installation of Instrumentation and Control System including plant instrumentation, metering and DCS.

2.1 BOP Major Mechanical Systems

The Owner has purchased various pieces of BOP Equipment from the Contractor under another purchase contract. These include the following:

- (2) Simple Cycle Exhaust Stacks
- Liquid Fuel Treatment System
- (2) Fuel Gas Coalescing Filter Separators
- (3) Fuel Gas Compressors with 4160V MCC
- Demineralized Water Treatment System with Pumps
- (1) Instrument Air Compressor

2.1.1 Simple Cycle Exhaust Stack

The Contractor will install Owner furnished (2) 40 ft. exhaust stacks in accordance with the standards set out by GE for each LM2500 machine.

2.1.2 Plant Fuel Gas System

The Contractor will install the plant fuel gas system outlined as follows:

- Interconnect to Owner gas metering and regulation station above ground adjacent to the existing at the Arrecife Power House.
- Install two (2) Owner Furnished redundant coalescing filter separators on a common skid.
- Furnish and install redundant pressure regulators.
- Install three (3) Owner Furnished fuel gas compressors required to raise the 230 psi. supply pressure to the required 450 psi. supply pressure to the LM2500 gas turbines.
- Furnish and Install all plant fuel gas carbon steel piping, valves and fittings from plant inlet fuel gas interconnect to the fuel gas Compressors and to each gas turbine regulator filter.
- Furnish and Install stainless steel piping from the fuel gas filter to the gas turbine generators.
- Each supply line to the LM2500 turbines will have a gas meter with totalizer.
- Each LM2500 package is equipped with gas detectors.
- The signals to monitor and control the gas pressure are taken to the LM6000 central control room.

2.1.3 Plant Liquid Fuel System

The Contractor will design and install the plant liquid fuel system outlined as follows:

- Supply and Install a diesel fuel offloading station with forwarding pump at a location adjacent to the main road in front of the existing Arrecife power house.
- Supply and Install a new pipeline from the diesel fuel offloading station to the diesel fuel storage tanks on the uphill side of the Arrecife power house.
- Scrap the (2) existing HFO storage tanks on the uphill side of the Arrecife power house and install (2) new Diesel Fuel storage tanks at the same location.
- Supply and install (2) 100% capacity fuel forwarding pumps to transport diesel fuel from the storage tanks to the site liquid fuel treatment equipment.
- Supply and Install a new pipeline from the Diesel Fuel storage tanks to the new plant liquid fuel treatment equipment.
- Install two (2) Owner Furnished Centrifuges for fuel treatment
- Provide and install treated liquid fuel day storage tank which will be supplied by the fuel treatment system.
- Install two (2) liquid fuel forwarding pumps.
- Install two (2) 100% capacity liquid fuel filter/regulator skids.
- Install two (2) 100% capacity liquid fuel injection pump skids.
- Provide and install all plant liquid fuel carbon steel piping, valves and fittings from the plant liquid fuel storage tank to liquid fuel treatment.
- Provide and install all plant liquid fuel stainless steel piping, valves and fittings from the plant liquid fuel treatment to the day storage tank and on to each gas turbine.

2.1.4 Water and Demineralized Water System

Contractor will install the following water & demin system:

- Install Owner Furnished Demin Water Treatment System
- Install Owner Furnished Potable Water Treatment System
- Provide and install all Demin water stainless steel piping, valves and fittings from the plant Demin storage tank to the gas turbines

The Demin water will meet GE's specifications as attached in Section 12.

2.1.5 Oily Water Drain System

The Contractor will furnish and install the oily water drain system as follows:

- Furnish and install below ground one (1) oily water separator with associated pumps and ancillaries.
- Furnish and install PVC or HDPE below ground piping and fittings from concrete oil containment units located at:
 - 1) All Transformers
 - 2) Gas Turbine Generator Auxiliary Skids

Piping is to be routed to the oily water separator. Waste oil piping is to be connected to the waste oil storage tank. Waste Water is to be connected to the existing waste water header system. The Contractor will make provisions to pump the waste oil to the existing waste oil tank at the Arrecife Power House.

2.1.6 Plant Fire Water System

Contractor will furnish and install the Firewater System extension that includes a pipeline connection to the existing main Firewater system.

- Headers routed throughout this LM2500 plant in accordance with NFPA Codes sized as 8" HDPE pipe.
- Monitors and Hydrants installed in accordance with NFPA Codes
- Portable fire extinguishers

2.1.7 Instrument and Service Air Systems

The instrument and service air systems will be as follows:

- Install one (1) Owner Furnished instrument and service air screw compressors with associated dryer and air storage tanks.
- Furnish and install galvanized steel piping, valves, fittings and instruments for instrument and service air systems from the air compressors to various required areas throughout plant for instrument air and service air. Furnish the appropriate quick connect connectors.

2.2 BOP Electrical Systems

2.2.1 13.8 KV System

The Contractor will perform the following work on the 13.8 KV system:

- Install two (2) Owner supplied 13.8 KV 2,000 amp generator circuit breakers with PTs and CTs
- Provide and install two (2) 13.8KV Fused Disconnect Switches.
- Furnish and install all 13.8 KV cabling, bus work, cable tray etc. from the generators to the generator circuit breakers and from Generator Breakers to GSU Transformers

2.2.2 13.8/4.16 KV System

The Contractor to provide the following:

- Furnish and install one (1) 13.8KV / 4160V auxiliary power transformer.
- Install (3) three Owner Furnished 4160 V MCCs to supply power to Gas Compressors

2.2.3 480V System

The Contractor will provide the 480V system as follows:

- Furnish and Install two (2) ea. 13.8KV/480V 750 KVA Aux. Transformers
- Furnish and install one (1) 480 V distribution switchboard
- Install one (1) Owner Furnished BOP 480V MCC
- Furnish and install cable tray / conduit with cabling from transformers to MCCs and from MCC to plant 480V equipment and motors.
- Furnish and install underground conduit, duct banks, or overhead cable tray mounted on the pipe racks.
- Install and connect owner supplied 600 KW Black Start Generator and ATS

2.2.4 120/240 System

The Contractor will provide the 120/240 system as follows:

- Furnish and install 480V/120/240V transformers, distribution panels and lighting panels as required with associated conduits, fittings and wire.

2.2.5 Plant Area Lighting

The Contractor will provide the plant area lighting as follows:

- Furnish and install area lighting consisting of four (4) 25 ft galvanized metal poles with two (2) 400 watt metal halide floodlights on each pole sufficient to illuminate both GTGs and common areas.
- The lighting system will be connected to the black start generator.
- 120 v power outlets will be furnished.

2.2.6 Ground Grid

The Contractor will provide the ground grid for the plant as follows:

- Furnish and install plant ground grid with associated ground rods and connections to plant equipment, buildings and fence. Ground grid to be connected to the Owners' existing main power plant grid.

2.2.7 Plant Electrical Cable Tray

The Contractor will provide the plant electrical cable tray work as follows:

- Furnish and install galvanized steel cable trays throughout plant. Cable trays to be mounted on pipe racks, cable trenches or within buildings for routing plant cabling. A separate cable tray will be installed for each of the 15 KV systems, 480V system, and instrumentation system cables.

2.2.8 Underground Conduit and Cable Systems

The Contractor will provide the plant underground conduit and cable system as follows:

- Furnish and install rigid galvanized conduit or PVC encased in concrete for all underground power, control and instrumentation systems.

2.2.9 Lightning Protection

The Contractor will provide lightning protection as follows:

- Furnish and install lightning protection on each gas turbine exhaust stack.

2.2.10 Batteries / Chargers / UPS Systems

The Contractor will perform the following work on the batteries / chargers / UPS systems:

- Furnish and install BOP UPS system for DCS remote PLC and associated equipment.

Note: 24 VDC batteries and 125VDC batteries and chargers are to be supplied as part of the GE packaged control house.

2.3 Plant Instrument and Control Systems

2.3.1 BOP Control System

The Contractor will furnish and install a BOP control system consisting of:

- One (1) DCS System

2.3.2 Plant Instrumentation Devices

- Gas Turbine Control Panel is supplied with each LM2500 gas turbine. The two Control Panels will be mounted in the modular pre-fabricated control Building.
- Contractor to furnish and install instrument devices, both pneumatic and electric, consisting of meters, pressure, flow, temperature and level where required.

2.3.3 Electronic Wiring and Pneumatic Piping

- Contractor to furnish and install necessary instrument wiring and pneumatic piping with associated Swagelok fittings, etc.

2.4 69 KV Scope of Work

2.4.1 Generator Step-up Transformers (GSUs) (Owner supplied)

- Contractor to install 13.8 KV cable from the Generator Breakers to the existing 69 KV GSUs.

2.4.2 Contractor to relocate two each 69 KV overhead transmission lines.

2.4.3 Protective Relaying

- Contractor to supply and install Differential and overcurrent protection relays for transformers.

2.5 Site Work

Contractor is responsible for the GEO TECH study, soil RESISTIVITY study, and HYDROLOGY to determine the creek levels for proper storm drainage, mud slides.

- Contractor will prepare the existing site as required to accept the LM2500 GTGs and the following:
 - Contractor to prepare the site for storm water drains and adjoining slopes to prevent mudslides.
 - Contractor to install the foundations for the Gas Turbines, Gas Compressors and BOP Equipment
 - Contractor to install the Driveways
 - Contractor to install Gravel Paving

2.6 Fencing

Contractor is to furnish and install perimeter fencing with razor wire (3) three meters high, to include access gate.

2.7 Plant Communication System

- Contractor to provide communication and public address system for the new plant.
- Contractor, while one site, to furnish temporary telephones and email capability for construction communication purposes.
- Permanent telephone lines for operation of the plant will be provided by Owner.

2.8 Plant Civil and Structural

- Site preparation, rough grading, and finished grading to be furnished by Contractor based on an existing site requiring minimal cut and fill.
- Contractor to furnish and install all plant reinforced concrete foundations designed to IBC 2003. GSU foundation shall have 9" freeboard.
- Contractor to furnish and install concrete containment curbs and equipment foundations.
- Contractor to furnish and install plant gravel and asphalt paving as shown on the Plot Plans.
- Contractor to provide structural steel pipe racks to support overhead piping and cable trays. Pipe racks to be located as shown on Contractor's Plot Plan drawings.

2.9 Plant Buildings

- Furnish and install a prefabricated metal Building for the Demin water treatment system, associated pumps and instrument air compressors
- Furnish and install a Shed for the Fuel Gas Compressors
- Furnish and install a Shed for the Liquid Fuel Treatment System.

2.10 Plant Equipment Erection

- Contractor to unload all Plant equipment delivered to site.
- Contractor will provide all cranes and support equipment and manpower as required to erect the gas turbine generators.
- Contractor to provide for erection of all BOP equipment.

2.11 Cranes, Equipment and Tools

Contractor to furnish or provide for all plant construction required cranes, fork lifts, back hoes, hydraulic lifts, welding machines, air compressors, generators, temporary lights, trucks, pick-ups, etc. All lifting equipment will be certified. Operators of heavy equipment will be certified as trained and qualified for the equipment they are operating.

2.12 Transportation

Clover International will furnish transportation of all Contractor and Owner furnished equipment from US Port to site.

2.13 Lubricants and Chemicals

- Contractor will supply and install all lubricants, lube oils and chemicals for equipment.

2.14 Spares

- Contractor will make provision to supply, receive and store all commissioning spare parts furnished for equipment during start-up and commissioning.
- Contractor to provide Owner with recommended list of spare parts for Gas Turbine Generator and BOP equipment.

2.15 Construction Offices and Storage Facilities

- Contractor to provide construction offices for Contractor, Technical Representatives (3), and Owner (1).
- Owner to provide lay down area / storage and site for construction offices and construction utilities (electrical and potable water)
- Contractor to provide fenced storage as well as fencing around a lay down area and the construction site during construction.
- Contractor to provide sanitation facilities for Contractor, & Owner personnel during construction.
- Contractor to provide communication facilities for construction.

2.16 Engineering and Project Management

- Contractor to provide detailed engineering and specifications for all disciplines involved for the power plant including mechanical, electrical, instrumentation, DCS System, civil and concrete foundations.
- Contractor to provide project management complete with construction management, quality control / quality assurance, scheduling, administration, warehousing, and expediting including regular monthly reporting of all disciplines.
- Contractor to arrange for and provide fully qualified technical representatives during erection, testing, start-up, commissioning for the gas turbine generator units and Chillers.
- Contractor to provide startup, commissioning and testing of BOP associated systems.

- Contractor to provide operator and maintenance training for Power Plant on the Gas Turbine Generator Packages, Chillers, and Balance of Plant.
- Contractor to provide one (1) electronic and two (2) hard copies of the existing equipment O&M manuals in English only and any new equipment manuals will be supplied in both English and Spanish. This also includes training manuals, engineering calculations, commissioning and start-up manuals, test manuals, as-built drawings, design specifications and warranty manuals for plant equipment.

2.17 Cathodic Protection

Cathodic Protection will be provided for all steel underground piping.

3.0 Equipment List – Detailed Division of Responsibility

| Material/Responsibility | Qty | Description |
|--|-------|--|
| OWNER | | |
| | 1 Lot | Natural Fuel Gas supply at the Arrecifes Power House |
| | 1 Lot | Fuel Gas and Liquid Fuel for Commissioning / Start-up that meets PDVSA Specifications supplied to Contractor by EDC. |
| | 1 Lot | Raw Water Supply and Fire Water Supply will be obtained from the existing TACOA Systems. |
| | 1 Lot | Raw Water for Commissioning and Startup |
| | 1 Lot | Waste Oil Disposal from the existing tank at the Arrecife Power House |
| | 1 Lot | Permits for Environmental, Importation, Transportation, Building, Operations, etc. to allow plant construction and commercial operations |
| | 1 Lot | Construction & Commissioning Water and 480V three phase power |
| | 1 Lot | Access Roads to site |
| | 1 Lot | Import Duties and Taxes |
| | 1 Lot | Construction lay down area |
| | 1 Lot | Right of Way, easements etc. to allow proposed interconnects as required |
| Owner Supplied Equipment | | |
| | 2 | GE LM2500 PE (60Hz) Dual Fueled Gas Turbine Generator packages |
| | 2 | Exhaust Stack with Silencers |
| | 2 | Modular Control Buildings with: <ul style="list-style-type: none"> • Turbine Control Panel • Generator Control Panel and Protection Panel • 24 VDC Batteries and Chargers • 125 VDC Batteries and Chargers • 125 VDC Rundown motor starter • 13.8 KV Generator Breaker Nema 3R |
| | 3 | Fuel Gas Compressors |
| | 2 | Liquid Fuel Centrifuges |
| | 1 | Instrument Air Compressor |
| | 1 | 600 KW Black Start Generator |
| | 1 | Demin Water Treatment System |
| | 1 | Potable Water Treatment System |
| | 2 | Liquid Fuel Pumps |
| | 2 | Potable Water Pumps |
| | 1 | 4.16 KV MCC for (3) Gas Compressors |
| | 2 | 100% Duplex Gas Guel Filter / Coalescer Skids |
| | 1 | 480 V BOP MCC |
| | 1 | Demin Water Forwarding Pump and Filter Skid |
| CONTRACTOR - ProEnergy EPC Responsibility | | |
| Civil/Structural | | |
| | 1 Lot | Site Preparation, Rough Grading, Excavation, Final Grading and Fencing |
| | 1 Lot | Construction Tools, Rental Equipment & Rental Cranes |
| | 1 Lot | Temporary Power Distribution |
| | 1 Lot | Plant Concrete Foundations |
| | 1 Lot | Plant Paving, Gravel and Pads for the GTG Turbines and Generators |
| | 1 Lot | Structural piping supports, platforms, ladders, and Misc structural steel supports. (Note: Platforms and ladders for the exhaust stacks to be furnished by Owner) |
| Buildings | | |
| | 1 | Water Treatment Building |
| | 1 | Liquid Fuel Treatment Shed |
| | 1 | Gas Compressor Shed |

| Material/Responsibility | Qty | Description |
|--------------------------------------|--------|--|
| Contractor (Continued) | | |
| Mechanical | | |
| | 1 | Fuel Gas Plant ESD Valve |
| | 1 Lot | Furnish and install carbon steel pipe from tie-in point at the Arrecifes Power House to fuel gas compressors and to each GTG fuel gas filter |
| | 1 Lot | Furnish and Install stainless Steel piping from GTG fuel gas filter to the GTG gas fuel connection |
| | 1 | Fire Water System with HDPE Pipe Loop, Monitors and Controls |
| | 2 | 21,000 Fiberglass Demin Water Storage Tanks |
| | 1 | Oily Water Separator |
| | 1 | Waste Water Tank 5,000 Gallon w/waste water pump to Truck for disposal |
| | 1 | Waste Oil Delivery Pump to Truck for disposal |
| | 4 | 21,000 Gallon Liquid Fuel Storage Day Tanks |
| | 5 | Liquid Fuel Forwarding Pumps |
| | 1 Lot | Furnish and Install carbon steel piping from the liquid fuel supply to the liquid fuel treatment. |
| | 1 Lot | Furnish and Install Stainless Steel piping from the liquid fuel treatment to the liquid fuel day tank, GTG liquid fuel filters and to the GTG liquid fuel connection |
| | 1 Lot | HDPE – steel – SS Pipe, Valves and Fittings with Insulation as required |
| | 1 Lot | Mechanical Labor |
| Electrical | | |
| | 2 | 13.8 KV Fused Disconnects (Station Service) NEMA 3R |
| | 2 sets | 13.8 KV Cable Bus |
| | 2 | 13.8 KV / 480 V 750 KVA Station Service Transformers |
| | 1 | 13.8KV/4160 V 2000 MVA transformer for fuel gas compressors |
| | 1 | 480 V Distribution Switch Board |
| | 1 Lot | BOP 480/240 V Transformers, Lights, Panels etc |
| | 1 | 120 V UPS System for Control Room |
| | 1 | Plant Grounding Grid |
| | 1 Lot | Lightning Protection |
| | 1 Lot | Cathodic Protection for underground steel piping |
| | 1 Lot | Area Lighting |
| | 1 Lot | 480 V Welding Receptacles |
| | 1 Lot | Electrical Labor |
| | 1 Lot | Local Subcontractor(s) Civil, Electrical & Mechanical Craft Labor |
| Instrumentation & Control | | |
| | 1 Lot | Plant Instrumentation |
| | 1 | DCS PLC |
| | 1 Lot | I&C Installation and Construction |
| Construction | | |
| | 1 Lot | Major Equipment Erection |
| | 1 Lot | Mechanical Installation and Construction |
| | 1 Lot | Construction Tools, Rental Equipment & Rental Cranes |
| | 1 Lot | Lubricants, Chemicals, Filters, etc. for Plant commissioning and Start up |
| | 1 Lot | Balance of Plant Start up and Commissioning Spare Parts |
| | 1 Lot | Plant Commissioning and Performance Testing |
| | 1 Lot | Overall Plant Training |
| Engineering | | |
| | 1 Lot | Conceptual and Detail Design Engineering (Total Plant) |
| | 1 Lot | Project Detail Engineering |
| | 1 Lot | Project Manuals including O&M, Warranty, and Engineering Calculations |
| | 1 Lot | As Built Drawings |
| | 1 Lot | Recommended Vendor Spare Parts List |

| Material/Responsibility | Qty | Description |
|-------------------------------|-------|--|
| Contractor (Continued) | | |
| Project Management | | |
| | 1 Lot | Project Management with QA/QC, Safety, and Training |
| | 1 Lot | Project Manuals including Project Procedures, Systems Turnover Manuals, Project Implementation, QA/QC, Safety and Training |
| | 1 Lot | Training |

Section 4.0 Design Basis and Interconnection Points

4.1 Design Basis

Design Conditions

| | |
|-------------------------------------|------------------|
| Site Elevation | 100 Ft. |
| Design Air Temperature | 80° F |
| Air Temperature, Low | 75° F |
| Maximum Wind Velocity | 100 mph |
| Design Relative Humidity | 78% |
| Seismic Zone | 4 |
| Fuel Gas Supply Pressure | 230 psig minimum |
| Medium Voltage Interconnect | 13.8 KV |
| Instrument Air System | 185 scfm |
| Demin. Water Supply (max liq. Fuel) | 48 gpm |

4.2 Interconnect Points

Interconnect Points with Owner Facilities

| | |
|-------------------|---|
| Fuel Gas | Customer Meter Station 250 psig at Arrecife Power House |
| Plant Waste Water | At existing waste water system |
| Plant Waste Oil | At waste oil tank at Arrecifes Power House |
| Telephone | None |
| Fire Water Supply | At existing Firewater System adjacent to the Site |
| Raw Water Supply | At existing Raw Water Tanks above the Site |

Section 5.0 Expected Performance Using Natural Gas and Diesel Fuel (Not Guaranteed)

The expected performance for the plant is presented in the performance calculations included in this section. Calculations were performed for operation on both Natural Gas and #2 Diesel for the LM2500 PE, with and without water injection, at the design conditions listed. A performance summary is attached on the following pages.

80°F; 78% RH; 100 ft (Design Conditions)

| | | Total (2) Units | | Total (2) Units | | Total (2) Units | | Total (2) Units |
|--------------------------------|------------------------|-----------------------|----------------------------------|-----------------------|-----------------|--------------------|----------------------------------|--------------------|
| | Natural Gas | | | | Diesel | | | |
| | LM2500PE | | LM2500PE Water Inject | | LM2500PE | | LM2500PE Water Inject | |
| Gross GT Power ea. (kW) | 20894 | | 22056 | | 20973 | | 22463 | |
| Net LHV HR (BTU/kWh) | 9715 | 9711 | 10050 | 10046 | 9736 | 9732 | 10097 | 10093 |
| Net Power (kW) | 20393 | 40801 | 21477 | 42972 | 20597 | 41208 | 22022 | 44060 |
| Auxiliaries (kW) | 502 | 897 | 580 | 1141 | 375 | 737 | 441 | 865 |
| Fuel usage (pph) | 9956 | 19912 | 10850 | 21700 | 10960 | 21920 | 12150 | 24300 |
| Fuel usage (MMSCFD) | 5.1 | 10.2 | 5.6 | 11.2 | -- | -- | -- | -- |
| Fuel usage (gpm) | -- | -- | -- | -- | 25.3 | 50.6 | 28.1 | 56.2 |
| Fuel Chemical HHV/LHV ratio | 1.107 | 1.107 | 1.107 | 1.107 | 1.065 | 1.065 | 1.065 | 1.065 |
| Water Injection (pph) | N/A | N/A | 11320 | 22640 | N/A | N/A | 11990 | 23980 |
| Water Injection (gpm) | N/A | N/A | 22.6 | 45.3 | N/A | N/A | 24 | 48 |

6.0 Plant and Equipment Warranties

Balance of Plant Warranties – Contractor will obtain from all equipment vendors their warranty on the material and equipment provided. These warranties will be for a term of 12 months from commercial operation (full power) date and if a replacement is required, for a term of 12 months following such replacement. The warranty for each component will include replacement of the item as well as the Contract labor cost to replace and install.

This vendor warranty information will be assembled and packaged into a Warranty Manual. The Warranty Manual will provide vendor name and contact information, component description, and model number. The warranty Manual will be provided to the Owner.

Section 7.0 Project Management and Organization

7.1 Project Management Execution

7.1.1 Project Management Team (Typical)

The Contractor will assemble a well qualified and experienced team of individuals who have worked together on many previous projects.

The team will be comprised of:

- Project Manager
- Administration Manager
- Project Technical Consultants
- Construction Manager
- Purchasing / Expediter
- Scheduling
- QA/QC
- Project Engineering Manager
- Site Erection
- Commissioning / Start up Managers
 - Mechanical
 - Electrical
- Mechanical Construction Superintendent
- Electrical Construction Superintendent
- Training

The team as outlined above has worked together on many gas turbine generator power plants within the US as well as internationally. They have successfully completed a number of "Fast Track" projects internationally.

7.1.2 Project Manuals

One of the first tasks to be initiated is the preparation of the project specific project manuals. These manuals are listed:

- Project Procedures
- Project Implementation
- Project Engineering Calculations
- Project Warranties
- QA/QC
- Safety
- Training
- Operation and Maintenance
- Commissioning, Start Up, and Turnover
- Project Performance Tests

7.1.3 Project Schedule

Along with the commencement of preparation of the project manuals, the detailed project schedule will be started. This detailed schedule will be developed utilizing Microsoft Project. The project schedule will be a living document which will be continually updated by a full time assigned scheduler for the life of the project. The proposed project schedule is included in Section 8.0.

7.1.4 Project Engineering

Preliminary conceptual engineering has been developed during the proposal phase which consists of:

- General Arrangement Plot Plan
- Process Flow Diagram
- One Line Diagrams

The conceptual drawings listed above are immediately completed after project Notice to Proceed. This entails updating the various drawings based on final agreed upon items with the Owner and/or Owner's Engineer. The Process Flow Diagram is completed with the latest heat and material balance. The One Line Diagrams are further developed to reflect loads, breaker / fuse sizing, DL power, etc. The Control System Drawing is likewise further completed reflecting agreed upon HMI's, printers, Balance of Plant Equipment PLC's, etc.

The conceptual engineering is completed utilizing the project technical consultants (responsible for proposal preparation) and the detailed engineering team to guarantee a smooth hand over to the detailed engineering phase.

During the conceptual engineering phase, specifications are finalized for all engineered equipment to be purchased. On a "Fast Track" project most of the engineered equipment has been preliminarily specified with only final checks and agreed upon modifications made.

Detailed engineering will be completed utilizing the conceptual drawings previously described and with Owner approval. This detailed engineering will include: engineering protocol for drawings and specification.

As-built drawings will be completed upon completion of the installation phase of the project.

7.1.5 Owner Approval

It is proposed that three approval steps be in place for the engineering phase of the project. These steps would be 30%, 60%, and 90%. The Owner or Owner's Representative could travel to the Contractor or vice versa at the Owner's request.

7.1.6 Project Procurement

Major engineered equipment which has been specified during the proposal and configuration phases of the project are submitted on the agreed upon approval process and when approved will be purchased.

The Balance of Plant Equipment and materials (normally short delivery) will be itemized and listed during detailed engineering. A decision will be made as to who will furnish (Contractor or Subcontractor) based on job conditions, locations, etc.

7.1.7 Construction Phase On Site

The project management team will move to the site for the construction phase of the project. This phase is further described as follows:

1. Mobilization

A mobilization and construction lay down plan will have been prepared as part of the Project Implementation Manual. This would include setting up the normal required items.

- Construction offices
- Site utilities
- Secure and non-secure lay down areas
- Communications
- Project management housing, transportation, food, etc.
- Arrangements for major equipment rental
- Surveys, soil tests, etc.

2. Project Construction

Project construction will be carried out utilizing local subcontractors and materials where feasible. Contractor will furnish construction management and detailed supervision of all disciplines.

3. Commissioning and Turnover

Commissioning and Turnover Manuals will be prepared for each discrete system making up the power plant. An experienced and knowledgeable commissioning and turnover team will be assigned under the supervision of a well qualified start-up manager. This team will commission on a "priority system" basis the various systems to provide for plant start up. It is desired that plant operation and maintenance personnel be involved to provide valuable hands on experience.

4. Training

Operation and maintenance training will be conducted in two phases:

- General Electric LM 6000 GTG equipment classroom at the site subject to plant operator preference.
- On site balance of plant operation and maintenance.

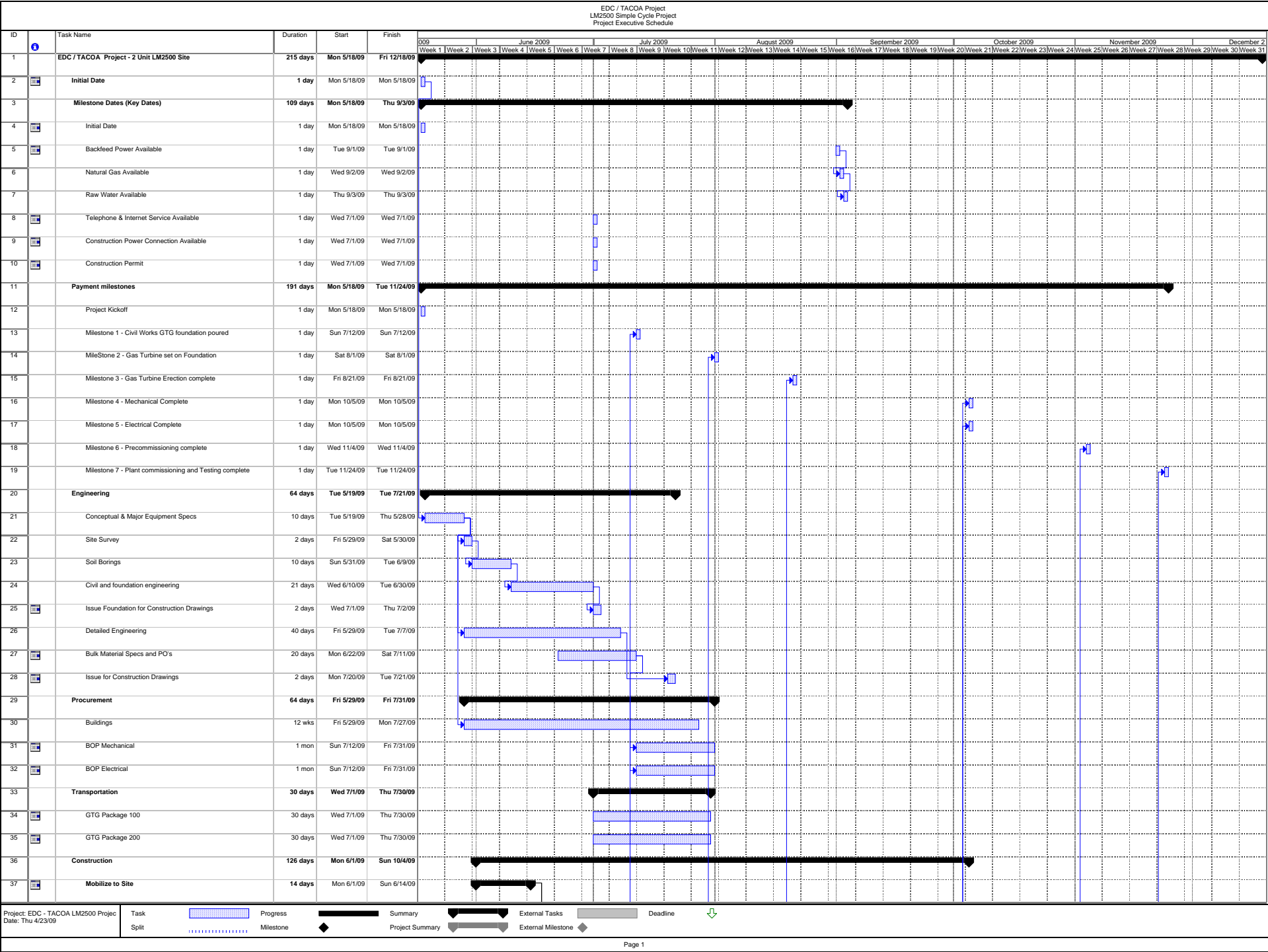
Formal training manuals will be prepared with formal on site training to be conducted.

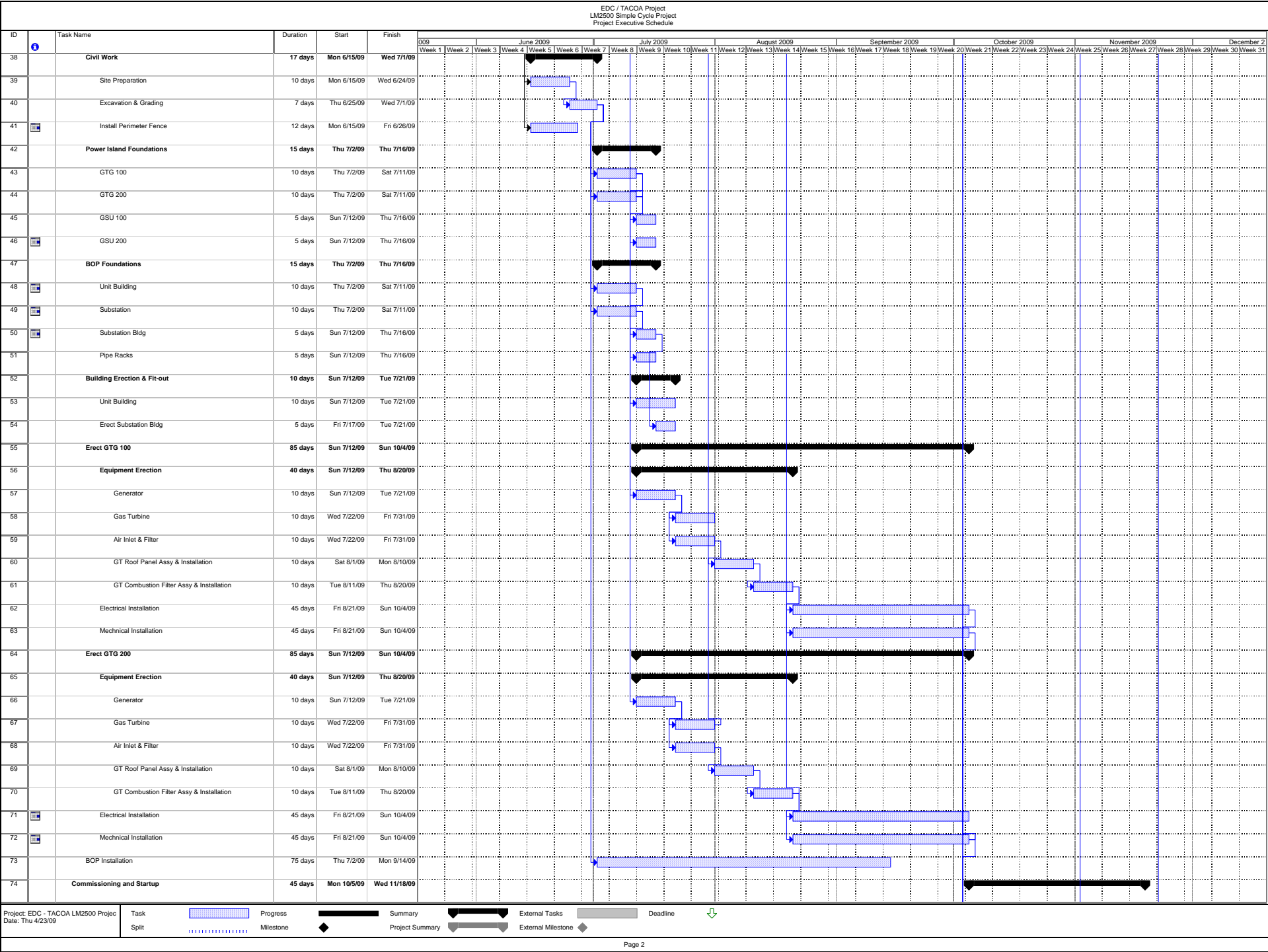
5. Plant and Performance Testing

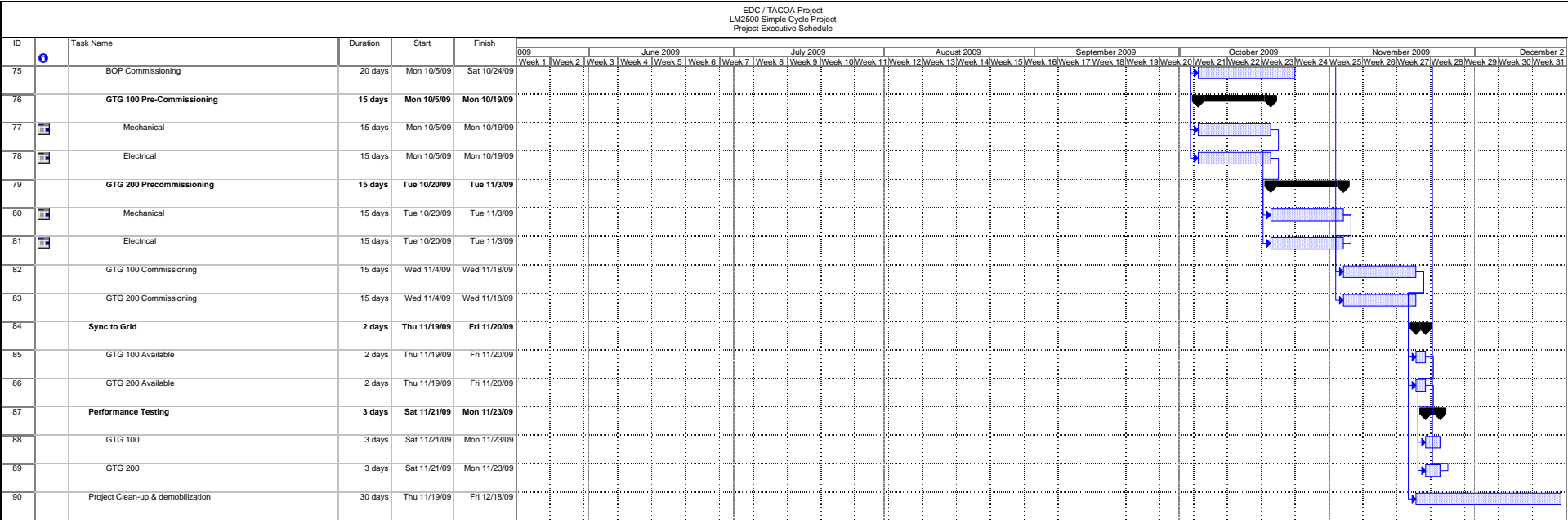
Plant and performance test documents will be prepared and submitted for approval. The formal tests will be conducted on an agreed time with the necessary Owner's Representatives attending.

8.0 PROJECT SCHEDULE

Please find on the following pages ProEnergy EPC Services' Typical Project Schedule for the installation of a (2) unit LM2500 Plant.







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PART 1 PROJECT QA/QC PLAN

I. INTRODUCTION

Our employees have over 40 years of history with EPC projects for the Power Generation industry. As a turnkey engineering and construction contractor, we have followed stringent quality guidelines throughout its history. The QA/QC Controls in place have been developed and fine tuned over these multiple and varied project experiences. The QA/QC plan that exists today is based upon experience in interpretation and application of codes and standards as well as practical knowledge learned in expeditiously bringing a project to successful completion.

The following sections will provide a detailed description of the Corporate Policy regarding Quality Assurance/Quality Control and a Project Specific Plan for the Quality Assurance/Quality Control management of the Power Project.

II. ORGANIZATION

The Quality Assurance Manager acts as the point-of-contact for any non-conformance reports and initiates corrective action as required. He/she ensures that required inspections, tests, evaluations, reviews, audits and all other quality control measures are performed as necessary to strictly adhere to the corporate-approved Quality Control and Assurance program plan. The Quality Assurance Manager is assisted by a team of inspectors who conduct all manners of inspections and tests required, ensuring that the installed system conforms to the approved drawings and specifications.

An organization chart is furnished which shows the organization of the Quality Control and Assurance Team by position, title and name. All quality control team personnel will be assigned based upon individual and collective expertise as related to the specific areas of quality control necessary to support the contract work effort.

III. PLAN TASKS AND PROCEDURES

A. Construction Design

1. Design Documentation Review - Drawings

Project Engineers are responsible for conceptualizing and engineering the project. To ensure that the design meets all requirements, inspections will be conducted throughout the design process. Prior to issuance of "Issue For Construction" package, all drawings will have the following signatures and dates.

| | |
|------------------|---|
| Draftsman | Signature and Date in Drawn By Block |
| Checker | Signature and Date in Check Block |
| Project Engineer | Signature and Date in Design Block |
| Project Manager | Signature and Date in Project Manager Block |
| QA Manager | Signature and Date in QA Block |

The Project Engineer responsible for the drawing design will initial his approval on all completed drawings. Fundamental configuration drawings (i.e., PFD, P&ID, Electrical One-lines, and Control Configuration drawings) will undergo peer review. Selection of the peer reviewer will be made jointly by the Senior Engineering Manager and the QA/QC Manager. The Quality Assurance Manager will check the drawing for all necessary signatures and initials and will then sign his name and date. The Drawing Review Sheet will be filed by the Quality Assurance Manager as a permanent project record.

Changes to approved drawings require the same review process. Changed drawings will be issued as revisions and will be labeled as such.

2. Design Documentation Review - Specifications

A specification will be generated for each major piece of equipment to be purchased for this project. The Project Engineer responsible for the generation of each specification will initial the completed specification. Prior to each specification's attachment to a Request for Bid or a Purchase Requisition, this specification will undergo peer review by the Project Manager and the Engineering Manager. The Specification will then be passed to the QA/QC Manager for his review and will become a permanent part of the project record.

3. Drawing Control

A Master Drawing Index of all drawings will be maintained. The index will be updated as drawing changes occur and will reflect the current status of each drawing. Only the latest applicable drawings, specifications, instructions and authorized changes thereto, will be issued for manufacturing, construction, inspection and testing. Reproducible copies or computer disk files of final revision levels of a drawing will be maintained for record.

B. Subcontracted Design

The same approval and quality assurance procedures to which own design work is subjected will also be applied to all design work subcontracted to an outside source. Drawings and other design documents will be reviewed and examined for compliance with both the technical and format requirements of the contract specifications.

C. Material Procurement

Responsibility for procurement of various equipment and supplies will be clearly defined prior to the initiation of any procurement. Purchasing Manager and staff will directly monitor all procurement efforts of major equipment under their immediate control.

Balance of Plant purchasing, i.e., Buildings, Mechanical, Electrical (conduit, fittings and wire), and Area Lighting will be the primary responsibility of the various subcontractors. Some of the project tasks will be purchased as a sub-system or system from different vendors or subcontractors. In order to ensure adherence to the project schedule, will direct scheduling and expediting of materials and equipment purchased by subcontractors.

1. Procurement Procedures

Procurement Procedures are published in the Corporate Project Procedures Manual. The following sections detail Procurement Procedures for this project. We implements these controls for every large project to ensure that the client receives the best value in materials and equipment as well as a quality installation effort.

1.1 Prequalification of Manufacturers / Vendors / Construction Contractors

Select Manufacturers / Vendors / Construction Contractors based on our own Qualified Vendors List (QVL). The stated purpose of the QVL is to ensure the best value and the highest quality in workmanship, materials and equipment for and our clients. Each manufacturer / vendor / contractor listed on the QVL has been evaluated based on past performance using the following criteria:

- Proper documentation of and compliance with inspection/test requirements
- Quality of workmanship
- Efficient handling of Purchase Orders
- Adherence to shipping schedules
- Prompt resolution of non-conforming material problems
- Compliance in manufacture and supply with specifications
- Warranty Work
- Product or Product Lines
- QA/QC audit (if necessary)
- Price

New vendors / contractors with no previous history are evaluated based upon the following:

- Product Lines
- Project Histories for similar projects

- Discussion with former Client Contacts
- Financial Stability
- Staff Qualifications
- Capability to complete the project
- Financial Stability
- QA/QC Audit (Manufacturers / fabricators if necessary)
- Client List

1.2 Material / Equipment / Parts / Services Selection

This section provides an overview of methodology in selecting materials, equipment, parts and services. Expediting procedures are included to ensure that the project schedule is not impacted by shipping delays.

The established twelve main stages in the procurement of materials, equipment, parts and services:

- Preparation of the Specifications for equipment and materials
- Identification of each item and preparation of purchase requisitions
- Issuing the Request for Quotation
- Quotation Review, Negotiations and selection of vendor or contractor
- Preparation and Placement of the Purchase Order
- Scheduling delivery of the Purchase Order
- Expediting the Purchase Order
- Receipt of Materials/Equipment/Parts and Inspection of same
- Inspection of Contracted Services and Approval of Same
- Resolution of any Non Conforming Material problems as well as any Corrective Action Items
- Field Purchase Orders

2. Equipment / Material Specification Preparation

Procurement specifications originate in the Engineering Department. The Engineering Manager will task staff engineers with the generation of specifications. The Engineering Manager and the Project Manager will review the equipment specification for compliance with applicable codes/standards and contract specifications. If Client approval is required, the Project Manager will forward specification to Client, obtain approval signatures, and then return the approved specifications to the Engineering Manager.

Standard Specifications are divided into two (2) classes, “short form” and “book type.” Short form specifications are used whenever good engineering practice and contractual arrangements permit. They are simple and flexible. “Book type” specifications are more formal, more expensive, and may be used on major engineered items of equipment, usually at the request of the Client.

2.1 Purchase Requisitions

Purchase Requisitions will originate with engineering. The Purchase Requisition will be approved by the Project Manager or Engineering Manager prior to submittal to the Purchasing Department. The Requisition will be checked by either the Engineering Manager or the QA/QC Manager for compliance to specifications. The Purchase Requisition will then be forwarded to the Purchasing Manager. The Purchasing Manager will direct that the Request for Quotation (RFQ) be developed and sent to approved suppliers on QVL. The specifications developed by Engineering will be attached to the RFQ.

The vendor or subcontractor shall be given sufficient time to prepare their bid for equipment or services. The time frame for bidder response shall be so stated on the RFQ.

2.2 Quotation Reviews

Each quotation will be reviewed prior to the issue of a Purchase Order. Major Equipment, Material, and Contracted Services purchases will be reviewed by a representative from the applicable engineering discipline and project management.

2.3 Purchase Order

Following evaluation of quotations and completion of negotiations, an award will be made. The Purchasing Manager will generate the Purchase Order.

Purchase Orders include the following:

- Detailed description of products and services
- Required delivery date
- Test and Inspection requirements, if applicable
- Terms of payment
- Shipping information and point of contact
- Required documentation

A Purchase Order Log will be maintained at all times. Purchase Progress Reports will be updated weekly.

2.3.1 Expediting the Purchase Order

Purchasing Manager will delegate an expeditor to track delivery of major equipment and materials for the project. The expeditor will closely monitor the progress in fabricating or gathering of materials from each vendor of equipment and materials which could impact the project schedule.

2.3.2 Closing out of Purchase Orders

Documented receipt of equipment / materials in good order will be forwarded to the Administrative Manager and the Purchasing Manager. Contracted services will be inspected and signed off upon satisfactory completion. At this time, the Administrative Manager will sign these documents and direct the Purchasing Manager to forward same to Accounting for payment. Payment will be by terms agreed to on Purchase Order.

2.3.3 Field Purchase Orders

Field Purchase Orders will require approval from Purchasing Manager. Field Purchase Orders will be documented, and a written Field Purchase Order Log will be maintained.

2.4 Material / Equipment Receiving Inspection

Receiving Inspections will be performed on all major equipment / material for the project. QA/QC project staff will perform the inspection. Methodology is discussed in detail in the project QA/QC Section of this document.

All materials requiring Material Certifications and/or Material Test Reports (MTRs) will be checked for compliance to project specifications. Materials received without the proper certifications will be tagged and segregated until such required documentation is received.

2.4.1 Hazardous Materials Storage

All coating materials, lubricants, flammable solvents, and other items identified by the Project Manager or the Owner as falling under Hazardous Material designation will be segregated from other project materials and equipment. These items will be stored in a secure location. All MSDS sheets will be posted in this area concerning each type Hazardous Material. An inventory will be maintained detailing receipt and issuance of any said material to installation staff and/or subcontractor.

If a subcontractor will directly receive or bring upon jobsite any materials in this category, they will be directed to comply with the established HAZMAT storage materials plan. This plan will be issued as a separate document and will be available at site for all personnel to review.

2.5 Corrective Action / Non-Conforming Equipment / Materials

All equipment / materials which do not reflect compliance to project specifications, shipped without MTRs, damaged in shipment, etc. will be tagged and segregated until such time as vendors resolve the problem. Methodology for these processes is discussed in detail in the QA/QC section of this document.

D. Test Plans

Test plans will be developed for testing each segment of the project both independently and collectively. Test plans will explain the purpose of the tests, define inputs, specify procedures, and acceptance criteria.

1. Measurement and Test Equipment

Measurement and test equipment used for inspection and acceptance testing shall be calibrated at established intervals against certified standards. All subcontractor and vendor test equipment used for vendor acceptance testing in connection with this contract shall meet the same calibration requirements.

2. Documentation

Inspection and testing documentation will be prepared in clear language. Test procedures will define all conditions and materials required for the test, specify test equipment and provide pass/fail criteria.

Reports will be prepared to document the results of each inspection and test performed. The records will identify the test equipment used, the observations made, the deficiencies found and the corrective actions taken.

3. Definition of Test Types

- a. Factory Tests are defined as tests performed at the location where the item is produced, fabricated, manufactured or assembled prior to shipment to the site.
- b. Field Verification Tests or Pre-Operational Tests are tests performed after installation. These tests verify that components and subsystems are installed and perform correctly.
- c. The Operational Systems Test is a comprehensive test of the installed system. The results of this test determine acceptance or rejection of the system.
- d. Performance tests are a series of tests to verify project-mandated performance guarantees.

E. Corrective Action

When problems or deficiencies are discovered in workmanship and/or materials during the inspection process, they will be documented. The inspector will prepare a Corrective Action Request (CAR) detailing the problem and submit it for resolution. The QA Inspector will forward the CAR to the QA Manager and the Project Manager. Corporate

Project Management will investigate the problem and direct the proper course of action. All Corrective Action Requests shall be maintained for future reference or analysis as may be required.

IV. INSPECTION REQUIREMENTS

A. Responsibilities

Perform the inspections and/or tests required to substantiate that the materials and services conform to requirements. The Client may witness any of the inspections or tests. All errors and/or defects discovered during inspections and/or tests shall be documented.

B. Classification of Test

Test Classifications include factory testing of components and major subsystems, field testing, and on-site final acceptance testing of the complete system. Some of the individual component and subsystem testing may be performed concurrently with the Operational Test. Construction Inspections will be performed during the installation work.

1. Factory Testing

Factory testing will be accomplished as required to ensure compliance with the contract specifications. Prior to shipment from the factory, some components and/or subsystems may be tested to demonstrate their compliance with the specifications. These items shall be identified and noted on the purchase order.

2. Operational System Test (OST)

A test of the entire System in full operational mode will be conducted to verify correct operation of all subsystems and system components. All functional capabilities of the system will be demonstrated. Following completion of the test, we will prepare and submit a test report.

These test procedures will be developed during the project construction phase and will be delivered to the client for approval prior to Operational Testing efforts being undertaken.

4. Performance Tests

A series of tests will be conducted to verify project performance guarantees. These tests will include

- Gross power output in kW
- Parasitic Load
- Net Power Output in kW
- Gross and Net Heat Rate

C. Test Documentation

The Quality Assurance Manager will ensure that test procedures and test reports are prepared as outlined herein. Test documentation will be issued to the client. Test procedures will be developed for testing components, subsystems and the overall system. Testing shall demonstrate that the system design meets the requirements and that materials and workmanship are as specified. Test results shall be recorded and bound with the test procedures to form a permanent record.

V. PROJECT SPECIFIC INSPECTIONS AND TESTS

The project warrants a wide variety of inspections and tests. The following sections briefly describe the project inspection and test requirements by function and/or discipline.

A. Site Preparation

- Confirmation of site dimensions.
- Confirmation of topographical elevations on completion of final grading. Assumes existing elevation is within two (2) feet of final grading level.
- Confirmation of Water Run Off Control after Final Grading is achieved
- Review of complete soil compaction and associated tests.

B. Ground Grid

- Confirm grid installed at correct depth and dimension with correct materials.
- Observe and confirm that junctions, splices, and taps are made with the correct Thermic weld type molds or pressure connectors and tools.
- Observe and confirm that correct wire and size are used with regard to ground rods.
- Perform ground grid resistance test.

C. Concrete Foundations, Walls and Slabs

- Confirmation of correct locations and dimensions of concrete foundation and wall forms.
- Confirmation of correct size and spacing of rebar in concrete foundations.
- Confirmation of proper anchor bolt sizes and location.
- Verify procurement of correct concrete strength.
- Witness the taking of necessary concrete samples for "slump" and "strength tests."
- Obtain qualified testing lab for concrete strength tests.
- Confirm proper correct elevations and slope of all slabs, walls, etc.
- Document above items on concrete pour card.

D. Electrical

- Witness factory tests for correct power and control on all motor control centers (if applicable).
- Confirm the receipt of each major item of electrical equipment. Verify specification compliance and inspect for transit damage.
- Confirm that receipt of all equipment and miscellaneous materials - conduits, cabling, etc., adhere to procurement requirements.
- After wiring is pulled and prior to connection, the wire will be Megger tested and all test results will be recorded on a Megger / Hi-Pot Test Record Form.
- Observe all conduits routing to ensure adequate turning radius for cable pulling.
- Perform detailed point-to-point wiring checks to verify power, control, and instrument wiring.
- Perform pre-operational tests on all electrical equipment and systems.
- Confirm tagging and labeling, verify and document as-built drawings.

E. Structural Steel

- Confirm correct size and type of structural steel.
- Confirm proper installation of anchor bolts, washers, and nuts installed, as required.
- Verify that qualified welders perform welding in accordance with applicable codes.
- Visually inspect all field welds to confirm they are complete and adequate.
- Verify paint and corrosion protection.

F. Piping and Welding

- Confirm correct size, rating, etc., of each piping system as applicable.
- Verify that qualified welders are utilized. Inspect piping fit up to ensure proper workmanship is utilized.
- Obtain qualified testing lab for welding radiography.
- Set up welding inspection and test procedures in accordance with applicable codes and standards.
- Set up a detailed welding documentation system to address individual pipe code, each weld, x-ray, welder, welding map, date, and inspector review.
- Establish a pipe cleaning procedure.
- Witness hydrostatic testing and test procedures, as required by various codes for each piping system.

G. Instrumentation

- Confirm all instrumentation and control equipment adheres to procurement requirements.
- Confirm instrumentation specification compliance, and inspect for transit damage.
- Observe individual calibration of each instrument, confirming range, accuracy, etc. in accordance with specifications and applicable codes.
- Perform functional loop checks and document same.

H. Documentation

Test and Inspection Documentation will be maintained on site throughout the project construction, commissioning and startup phase. The client will be allowed access to this data at any time.

Following Completion of Startup and Commissioning, the full battery of project Testing and Inspection Documentation will be delivered to the Client.

VI. SHIPPING AND HANDLING

Procedures for shipping and handling of materials will ensure that all shipments meet the requirements for identification, packing, packaging and data submittal. Contractor will be responsible for packing, shipping, receiving and installing the component parts and subsystems that comprise the complete system. The degree of protection and method of handling will be consistent with the anticipated hazards.

Contractor will ensure that the appropriate shipping and handling procedures will be followed. Should damage occur in transit, it will be repaired or replaced as appropriate.

PART 2 PROJECT SPECIFIC TEST AND INSPECTION PROCEDURES

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PART 2 PROJECT SPECIFIC TEST AND INSPECTION PROCEDURES

I. SCOPE

The following civil, mechanical and electrical test and inspection requirements have been developed for the project.

The civil, mechanical and electrical tasks on this project shall comply with the standards set forth in this document to ensure both the safety and quality of the installation. This document stipulates the inspections and tests that will be performed on the project.

II. STANDARDS AND CODES

The following organization's standards and codes are applicable to design and construction practices for the project.

| | |
|--|---|
| ANSI B31.3 | Plant Piping |
| ASME IX | Welder Qualifications |
| AWS A3/0 | Definitions of Welding Terminology |
| AWS B2.1-84 | Standard for Welding Procedure and Performance Qualification |
| AWS D1.1 | AWS Code for Structural Welding |
| AISC | American Institute of Steel Construction – Various sections |
| ASTM | American Society for Testing Materials – Various Sections |
| ASME | American Society for Mechanical Engineers – Various Sections |
| ISA S5.1 | Instrumentation Symbols and Identification |
| NACE RP018890 | Standard Recommended Practice: Discontinuity (Holiday) Testing of Protective Coatings |
| NEMA AB1 | Molded Case Circuit Breakers |
| NEMA ICS1 | General Standards for Industrial Control and Systems |
| NEMA ICS2 | Industrial Control Devices, Control and Systems |
| NEMA ICS4 | Terminal Blocks for Industrial Use |
| NEMA ICS6 | Enclosures for Industrial Controls and Systems |
| MG1 | Motors and Generators |
| PE5 | Constant-Potential-Type Electric Utility (Semi-Conductor Static Converter) Battery Chargers |
| SG2 | High Voltage Fuses |
| WC2 | Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy |
| NFPA70 | National Electric Code |
| NFPA No. 1 | Carbon Dioxide Extinguishing Systems |
| NFPA No. 37 | Stationary Combustion Engines and Gas Turbines |
| OSHA CFR Title 29 | Occupational Safety and Health Administration |
| (Note: Codes and Standards may also include Codes and Standards issued by other organizations as directed by Owner.) | |

III. TESTS / INSPECTIONS - CIVIL

Inspections will be undertaken throughout the civil portion of the project. The site dimensions will be confirmed. Topographical elevations will be confirmed following grading. All concrete slab and wall dimensions will be confirmed prior to concrete pouring. All concrete will be confirmed to be compliant with design specifications. A qualified third party inspection agency will be retained to conduct slump tests prior to and during concrete pours. All concrete will be strength-tested intervals per ASTM standards. Grouting of mechanical equipment skids will be performed per the developed specifications.

IV. TESTS / INSPECTIONS - GROUND GRID

The ground grid will be inspected throughout installation to ensure that materials used are per design specifications and that installation splices, junctions, and taps are made properly. Depth and dimensional boundaries will be measured and recorded. At the conclusion of installation, the grounding grid will be tested using a test instrument specifically for the task to confirm acceptable impedance levels.

V. TESTS / INSPECTIONS - MECHANICAL

Several elements of the project will require welding during fabrication and installation. These elements include:

- Structural Steel
- Fuel System - Natural Gas Fuel System Piping
- Fuel System - Liquid Fuel System Storage Tank and Piping
- Process Water Systems
 - Raw Water System Storage Tank and Piping
 - Waste Water System Piping
 - Firewater System Piping (HDPE piping Thermal Welding Inspections)
- Oily Waste System
- Lube Oil System

The welding inspection criteria for each of these tasks will be based upon the applicable codes and standards. The following paragraphs briefly describe each task and stipulate the specific code and/or standard(s) that apply.

A. Structural Steel

The structural steel aspects of the project will consist of the building related structural steel and various supports of racks. Design and erection of these assemblies shall be in accordance with the latest edition of the AISC. All welding will be visually inspected per AWS applicable codes and standards.

B. Welding Inspections/Tests

All welders are required to have current certification of their qualifications. Current certifications should indicate the welder has been tested to the project welding procedures within one year prior to welding on project piping.

All visual-welding inspections will be performed by persons who have current certification from AWS or ASNT-TC-1A. All NDE will be performed and approved by persons holding current ASNT-TC-1A Level II certification for the specific test processes implemented. All visual welding inspections will be performed based on the criteria established in ANSI B31.1 and AWS D1.1.

Radiographic Testing (RT) where necessary will be performed in accordance with standards established by ASME Boiler and Pressure Vessel Code, Article 2, Section V, except as stipulated in the applicable code, ANSI B31.3 (Pipe welding inside Plant Battery Limits).

Welded Steel Storage Tank welding and erection inspections/tests will be performed per API 650 (Welded Steel Tanks for Petroleum Storage).

All radiographs of full penetration welds must be accepted by a certified Level II inspector with current certification under ASNT-TC-1A. Accept/Reject criteria for all welds shall be in accordance with criteria established as well as applicable codes. Any rejections will require two (2) weld penalty shots on that welder. If in the judgment of the Site QA/QC Manager that a welder or welders have excessive rejections; may demand the welder be removed from the project or certified to weld on only non critical piping.

If the Client wishes, all radiograph films will become the property of Client and will be submitted with the accompanying reader sheets within two (2) weeks after completion of the project. The client may review the films and accompanying interpretations at any time at the project site. If the client does not desire the films, they will be destroyed at the completion of the project.

C. Natural Gas Piping

The Natural Gas Fuel System piping shall consist of piping installed from Client's source of supply to the Fuel Gas Compressors and on to Fuel Filter/Separators and finally to the Gas Turbine Generators. Piping from the supply source to the Fuel Gas Compressors and subsequently to the Fuel Filter/Separators will be Carbon Steel. The piping on the downstream side of the filter/separators to the will change to Stainless Steel piping. All Natural Gas piping will be designed and constructed to ANSI B31.3.

A total of 100% of the pipeline welds (100% of each weld) will be subjected to Radiographic Testing (RT).

All radiographs of full penetration welds must be approved and accepted per criteria established in Section B above.

D. Liquid Fuel System

The liquid fuel system consists of a double walled piping system from the storage tank underground to the filter skid. From the fuel filter skid, the piping changes to stainless steel between the skids and the gas turbine.

The double wall piping system will consist of 8" carbon steel piping with a Schedule 40 Polyethylene (PE) or Reinforced Thermal Resin (RTR) flexible 4" liner within. All carbon steel piping will be performed under ANSI B31.3. The bonding of the PE shall be performed under ASTM D-2104. If the piping system will be RTR ASTM 2996.

All piping systems will be visually inspected by Craft Inspectors qualified to visually inspect these systems. 10% carbon steel piping welds will undergo RT, 100% of the weld. RTs will be examined and approved by a Level II or III ANSTC-1A qualified technician.

PE or RTR lines will undergo hydro or pneumatic testing. If Hydrotest is used, water as the test medium hydro will be 1.5 times design pressure up to a maximum of 150 PSI. If a pneumatic test is decided upon, the test pressure will be 1.2 times design pressure.

E. Lube Oil System

The Lube Oil system consists of a skid and interconnecting stainless steel piping to the Gas Turbine Package. All interconnecting pipe welds shall be in accordance with ANSI B31.1. All Lube Oil system welds will undergo visual inspection or testing in accordance with ANSI B31.1. Ten percent (10%) of these welds will undergo RT testing (100% of the weld)

F. Hydraulic System

The Hydraulic System consists of a skid and interconnecting stainless steel piping to the Gas Turbine Package. All interconnecting pipe welds shall be in accordance with ANSI B31.1. All Hydraulic system welds will undergo visual inspection or testing in accordance with ANSI B31.1. Ten percent (10%) of these welds will undergo RT testing (100% of the weld)

All radiographs of full penetration welds must be approved and accepted per criteria established in Section B above.

G. Raw Water System

The Raw Water System consists of Carbon Steel Piping from the city water supply Water Day Tank. The Raw Water System Raw Water Pump then supply the Water Treatment and Demineralized Water Treatment systems via Carbon Steel Piping Systems.

Raw Water System piping welds will be visually inspected.

H. Process Water Systems

The process water systems consist of:

- The Lube Oil Cooling Water system shall consist of pumps and Carbon Steel Piping to and from Fin Fan Coolers to the Gas Turbine Lube Oil Skids
- The Oily Waste System consists of PVC Piping from Oil Containment areas located at various sites within the BOP to the new Oily/Water Separator

All welded steel piping will be visually inspected as welds are completed. All PVC piping joints will be inspected as they are made up. The Process water systems will be inspected prior to startup. All pumps will be balanced. Remaining components will be inspected and confirmed that they are supplied and installed per specifications.

I. Fire Water System

The Fire Water System consists of HDPE Piping from the City Water Supply to the Fire Water distribution system.

J. Pump Testing

All pumps supplied will be balanced and confirmed as fully operational prior to startup.

VI. WELDER QUALIFICATIONS

Welders qualified according to the appropriate codes shall make all welds on the project:

- | | |
|-----------------------------------|---------------|
| • Structural Steel | AWS CODE D1.1 |
| • Fuel System Piping | ANSI B31.3 |
| • Lube Oil System Piping | ANSI B31.3 |
| • Hydraulic Startup System Piping | ANSI B31.3 |

All welders will be required to provide certification of their qualification to the appropriate standard. Each welder's certified qualifications will be reviewed and approved by the welding inspector prior to the welder's beginning work on the project. Applicable welding procedure specifications (WPS) and Procedure Qualification Reports (PQRs) will be required. All reports and certifications will be in accordance with ASME Section IX Article II.

VII. AREA DESIGNATION

Areas where combustible fluids, gases or vapors might be present shall be classified as hazardous areas or hot areas. Guidelines for welding in these areas will be drawn from ANSI Z49.1. Areas designated as safe areas will be those areas on site remote from hazardous areas and where no contact with combustible fluids, gases and vapors are present. Welding in these safe areas, as well as on-site welding fabrication, will be subject to the same standards

and codes listed in the previous paragraphs. The welding inspector shall designate an area classification for the project.

VIII. MATERIAL TEST REPORTS

All carbon steel piping and flanges will be supplied with traceable material test reports (MTRs) as well as documentation certifying that the material is per specification.

All piping and flanges connected to the GE 7EA skid will be 304 or 304L seamless stainless steel. Traceable material test reports (MTRs) will be required on all stainless steel piping and flanges.

IX. SUB-SYSTEMS MECHANICAL TESTS

The test requirements for the various tasks on the project are defined in the following paragraphs. Tests are defined in this case to be "system" centered, i.e., hydrostatic tests, vacuum tests, etc., versus inspections which are "component" centered. All tests shall be performed in the presence of a QA/QC inspector or his designate. All tests shall be documented with a written test report. The test report shall include a description of the test, the item or items tested, the procedure used, the date and time of the test and the test results. All test documentation shall be signed by the inspector.

A. Fuel System Tests

All fuel system piping shall be subjected to hydrostatic leak testing to 1.5 times the design pressure. Non-pipe components of the system shall be isolated from the test. The hydrostatic leak test pressure shall be held for a minimum of 1 Hour and then reduced in accordance with ANSI B31.3 to conduct examination for leakage. Pneumatic tests on the PE or RTR may be substituted at 1.2 times design pressure.

B. Lube Oil System Tests

All Lube Oil System piping shall be subjected to hydrostatic leak testing to 1.5 times the design pressure. Non-pipe components of the system shall be isolated from the test. The hydrostatic leak test pressure shall be held for a minimum of 1 Hour and then reduced in accordance with ANSI B31.3.

C. Hydraulic Starter System Tests

All Hydraulic Starter System piping will be subjected to hydrostatic leak testing to 1.5 times the design pressure. Non-Pipe components of the system shall be isolated from the test. The hydrostatic leak test pressure shall be held for a minimum of 1 Hour and then reduced in accordance with ANSI B31.3.

D. Process Water System Tests

All metallic process water system piping will be leak service tested prior to commissioning. The piping systems under test will be brought up to Normal Operating Pressure and this pressure will be held for 10 minutes or as long as it takes to check each joint or fitting on the line under test. Test shall be conducted in accordance with ANSI B31.3 to conduct examination for leakage. Piping Systems which will be tested in this manner are the following:

- Cooling Water Systems (New Piping)
- Oily Water Piping

E. Instrument Air System Leak Tests

Instrument air piping systems will be subjected to a Pneumatic leak test following installation. Pressures will be raised to Normal Operating Pressures levels for each system and held for a minimum of 10 minutes.

X. SPECIFIC TESTS – ELECTRICAL**A. Ground Grid Integrity Test**

The new installed grounding cables/rods will be attached to the existing system. Installed Ground Grid will be tested using a suitable multimeter to measure integrity prior to startup. Continuity and resistance will be confirmed for the new installed cables/rods. The readings will be recorded for record.

B. Cable Insulation Testing - Megger

All 600 Volt and above wire and cable to be used on this project will undergo an insulation test or tests to ensure cable is suitable for intended usage and has structural integrity for installation. All low voltage cables, below 600 volts, will be tested for continuity prior to being energized.

All medium and high voltage cable and wire will undergo Megger testing. Cables will be tested to levels established not to exceed the rated voltage of the cables. Megger testing will be performed with a calibrated test instrument certified to national standards.

The results will be recorded and maintained for record. A cable failing a Megger test will be tagged, segregated and removed from the job site.

C. Cable Insulation Testing - Hi Potential Test

Medium and high voltage cables will undergo Hi-Potential testing to detect any insulation breakdown in these cables.

Testing will be accomplished with a calibrated instrument certified to national standards. Results will be recorded and maintained for record.

D. Cable and Conduit Installation - Inspections

All cable, conduit and associated fittings will be checked to ensure compliance to specifications developed for this project. Conduit, fittings and cable installation will be monitored during construction to ensure compliance to NEC codes.

E. Point to Point Testing

All installed cables shall be point-to-point tested prior to being energized. The point-to-point test shall confirm cables are installed as designed and phased properly.

F. Switchgear, Motor Control Centers, Breakers, and other Electrical Components, Instrumentation

All switchgear, motor control centers, breakers and other electrical components, will be inspected and tested prior to and following installation. Specific test procedures will be developed for each major piece of equipment to be installed. Electrical components will be inspected prior to installation and, in most cases, will be tested as part of a larger sub-system. Instrumentation will be inspected prior to installation and calibrated following installation. Instrumentation will be tested as part of a larger sub-system.

XI. FACTORY ACCEPTANCE TESTS / INSPECTIONS

The Client has the right to request the contractor an inspection of the equipment and witness all factory tests prior to shipment to the Project site. Tests will be undertaken at the manufacturer or fabricator's facility prior to being shipped to site.

Records of tests / inspections will be recorded and maintained for record. No sub-system or component will be installed until the successful completion of tests / inspections is achieved, or unless written release by the Manager is obtained.

XII. STARTUP TESTING AND COMMISSIONING

Startup testing and commissioning will involve integration of all sub-systems into a complete system-wide test of operation. Testing will involve operation of all sub-systems listed below:

- Process Water Systems – Raw Water Supply System and Firewater System
- Fuel Gas Delivery System
- Gas Turbine Startup
- Gas Turbine Electrical Transmission
- Breaker Operation
- Protective Relays, Breaker Testing

XIII. REPORTS

A copy of all inspection and test reports shall be maintained in a file at the project site. These reports shall be made available for review and reference as may be required throughout the project. The original copies of all inspection and test reports shall be forwarded periodically to the Quality Assurance Manager for review and safekeeping. Quality related problems that cannot be readily corrected at the project site will be immediately referred to the Quality Assurance Manager for resolution.

Section 10.0 Exceptions and Clarifications

For clarification of the project the following exceptions and assumptions are stated:

10.1 The Scope of Supply of this document does not include the following outlined items:

- Interconnect, integration, and compatibility with EDC's existing SCADA system
- Real estate property on which the Simple Cycle is to be sited.
- Local, state, and/or government taxes associated with the Owner's corporations.
- Local, state, and/or government taxes associated with the Contractor furnished equipment.
- Any existing site environmental cleanup or modifications to site. **Contractor is not responsible for the removal and disposal of any existing hazardous waste on or near the site. This would include but not be limited to PCB's (Polychlorinated biphenyls), Asbestos, or any other hazardous waste either above ground or buried under ground.**
- Environmental permits. (Note: Contractor will assist in obtaining all permits where applicable.)
- Local county or state construction permit. (Contractor will assist in obtaining.)
- Fuel gas or Liquid Fuel for blow down, flushing, commissioning, start-up, and operation.
- Supply of Owner furnished items as outlined in Section 3.0 of this Proposal.
- Operating spares. (Contractor will submit a list of recommended spare parts.)
- Operational spares for equipment furnished by Contractor, but commissioning and start-up are included.
- Waste Water System individual sumps but all drain to underground Oily Water Separator which pumps to Waste Oil Tank and Waste Water Tank.
- Insulation or Heat Tracing on Gas Turbine Generator or associated auxiliary skids

- Refurbishment of existing 5 ea liquid fuel pumps
- Interconnection of the 2 existing liquid fuel pumps
- Fiber optic cable detection system for unauthorized personnel located adjacent to perimeter fencing
- Contractor is not furnishing custody transfer fuel gas metering system. (This will be furnished and installed by the fuel gas supplier)

10.2 This proposal is also based on the following assumptions:

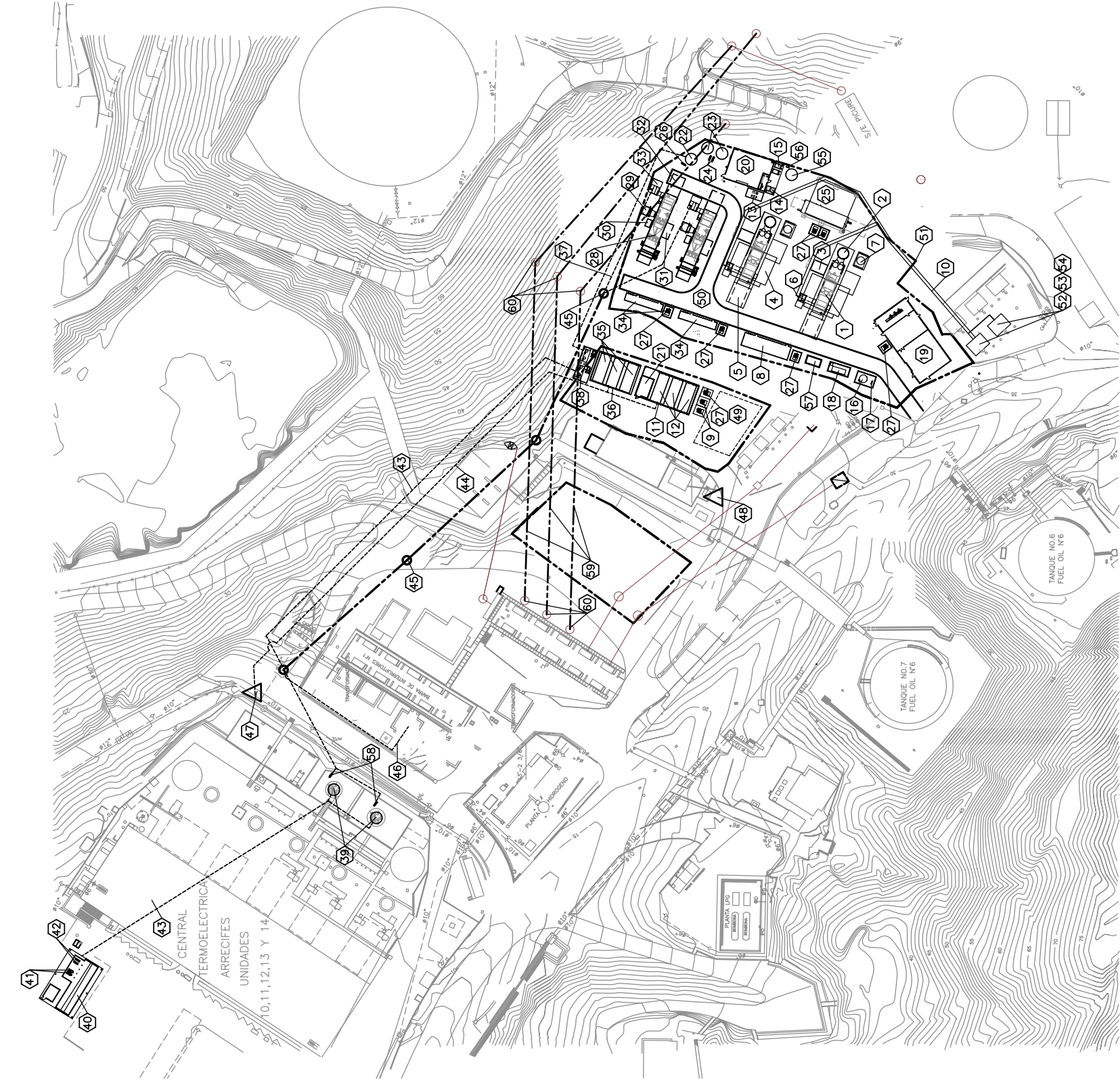
- Owner to supply to Contractor or receive the items outlined in Section 3.0
- Owner will provide complete site for use as described in the TSD and associated drawings.
- Contractor will obtain local county or state construction permit. (Owner will assist in obtaining.)
- Contractor to furnish and install “first fill” lubricants and chemicals for the plant.
- Owner will provide site survey.
- All rights-of-way for roadways, entrances, pipeline(s), and transmission line to the Power Project will be provided by Owner.
- Performance guarantees, administration of warranty conditions will be discussed and agreed upon and inserted into the appropriate sections of this document at contract signing.
- Software licenses will be transferred to the Owner at the completion of the project. This will include the license documentation passwords and keys. It will be the responsibility of the owner to maintain these licensing articles for the time when the software needs to be reinstalled.

The DCS Remote PLC shall allow for system expansion through the addition of controllers, operator stations in the control panels, process I/O systems and /or process controllers while the equipment associated with the controller/computer are in manual mode. Modifications can be performed while the Power Plant is operational and the equipment in question is in manual mode. Proper safety precautions must be adhered to. “Tag out” procedures may be required.

Section 11.0 Drawings

Please find on the following pages the following preliminary project drawings.

| | |
|-------------------------------|-------------|
| Overview Site Plan | 10-001 Sh 1 |
| General Arrangement Plot Plan | 10-002 Sh 1 |
| Process Flow Diagram | 50-001 Sh 1 |
| Process Flow Diagram | 50-001 Sh 2 |
| Process Flow Diagram | 50-001 Sh 3 |
| Process Flow Diagram | 50-001 Sh 4 |
| One Line Diagram | 60-001 Sh 1 |
| One Line Diagram | 60-001 Sh 2 |
| One Line Diagram | 60-002 Sh 1 |
| One Line Diagram | 60-003 Sh 1 |
| One Line Diagram | 60-004 Sh 1 |



LEGEND:

- 1

LM-6000 GAS TURBINE GENERATOR.
- 2

LM-6000 EXHAUST STACK.
- 3

LM-6000 AUXILIARY SKID.
- 4

LM-6000 TURBINE REMOVAL.
- 5

LM-6000 GENERATOR REMOVAL.
- 6

LM-6000 15 KV BREAKER.
- 7

LUBE OIL FIN FAN COOLER.
- 8

LM-6000 MODULAR CONTROL BUILDING.
- 9

AUXILIARY TRANSFORMER (4160 V).
- 10

LM-6000 OVERHEAD CABLE TRAY (CONNECTING FROM LM-6000 15 KV BREAKER TO LM-6000 GSUS).
- 11

LM-6000 GAS COMPRESSOR BUILDING & SHED.
- 12

LM-6000 FUEL GAS COMPRESSORS WITH FIN FANS ON TOPS.
- 13

FUEL GAS/FILTER SKID.
- 14

SPRINT SKID.
- 15

WATER INJECTION SKID (LIQUID FUEL).
- 16

OILY WASTE STORAGE TANK.
- 17

OILY WASTE FORWARDING PUMP.
- 18

OILY WATER SEPARATOR.
- 19

OFFICES/CONTROL BUILDING.
- 20

DEMIN WATER TREATMENT BUILDING.
- 21

MCC ROOM.
- 22

TREATED LIQUID FUEL TANK (21,000 GALS).
- 23

DEMIN WATER TANK (2-21,000 GAL EACH).
- 24

DEMIN WATER FORWARDING PUMPS.
- 25

4000 TON CHILLER PACKAGE (OPTIONAL).
- 26

LIQUID FUEL FORWARDING PUMP.
- 27

AUXILIARY TRANSFORMERS (480 V).
- 28

LM-2500 GAS TURBINE GENERATOR.
- 29

LM-2500 EXHAUST STACK.
- 30

LM-2500 AUXILIARY SKID.

31

LM-2500 TURBINE REMOVAL.

32

LM-2500 GENERATOR REMOVAL.

33

LM-2500 15 KV BREAKER.

34

LM-2500 MODULAR CONTROL BUILDING.

35

LM-2500 GAS COMPRESSOR SHED.

36

LM-2500 FUEL GAS COMPRESSORS WITH FIN FANS ON TOP.

37

LM-2500 UNDER GROUND CABLE (CONNECTING FROM LM-2500 15 KV BREAKER TO LM-2500 GSU).

38

CENTRIFUGE PACKAGE (SUPPLIED BY OWNER).

39

RAW LIQUID FUEL TANK (2-21,000 GAL EACH).

40

LIQUID FUEL UNLOADING AREA.

41

LIQUID FUEL OFF LOAD PUMP.

42

LIQUID FUEL TRANSFER PUMP.

43

UNDER GROUND DIESEL PIPING LINE.

44

UNDER GROUND NATURAL GAS PIPING LINE.

45

TRANSMISSION TANGENT POLE.

46

UNDER GROUND CABLE (CONNECTING FROM TANGENT POLE TO LM-2500 GSU).

47

NATURAL GAS SUPPLIED BY OWNER TIE POINT.

48

RAW WATER SUPPLIED BY OWNER TIE POINT.

49

EXISTING SUBSTATION AREA.

50

ROAD.

51

PROPERTY BOUNDARY CONCRETE RETAINING WALL.

52

LM-6000 GSU (SUPPLIED BY OWNER-TWO REQUIRED).

53

LM-6000 DISCONNECT SWITCH (NOT SHOWN-SUPPLIED BY OWNER-TWO REQUIRED).

54

LM-6000 69 KV BREAKER (NOT SHOWN-SUPPLIED BY OWNER-TWO REQUIRED).

55

RAW WATER TANK (21,000 GALS).

56

RAW WATER FORWARDING PUMP.

57

EMERGENCY BLACK START (SUPPLIED BY OWNER).

58

RAW LIQUID FUEL FORWARDING PUMP.

59

NEW 69 KV OVERHEAD TRANSMISSION LINE.

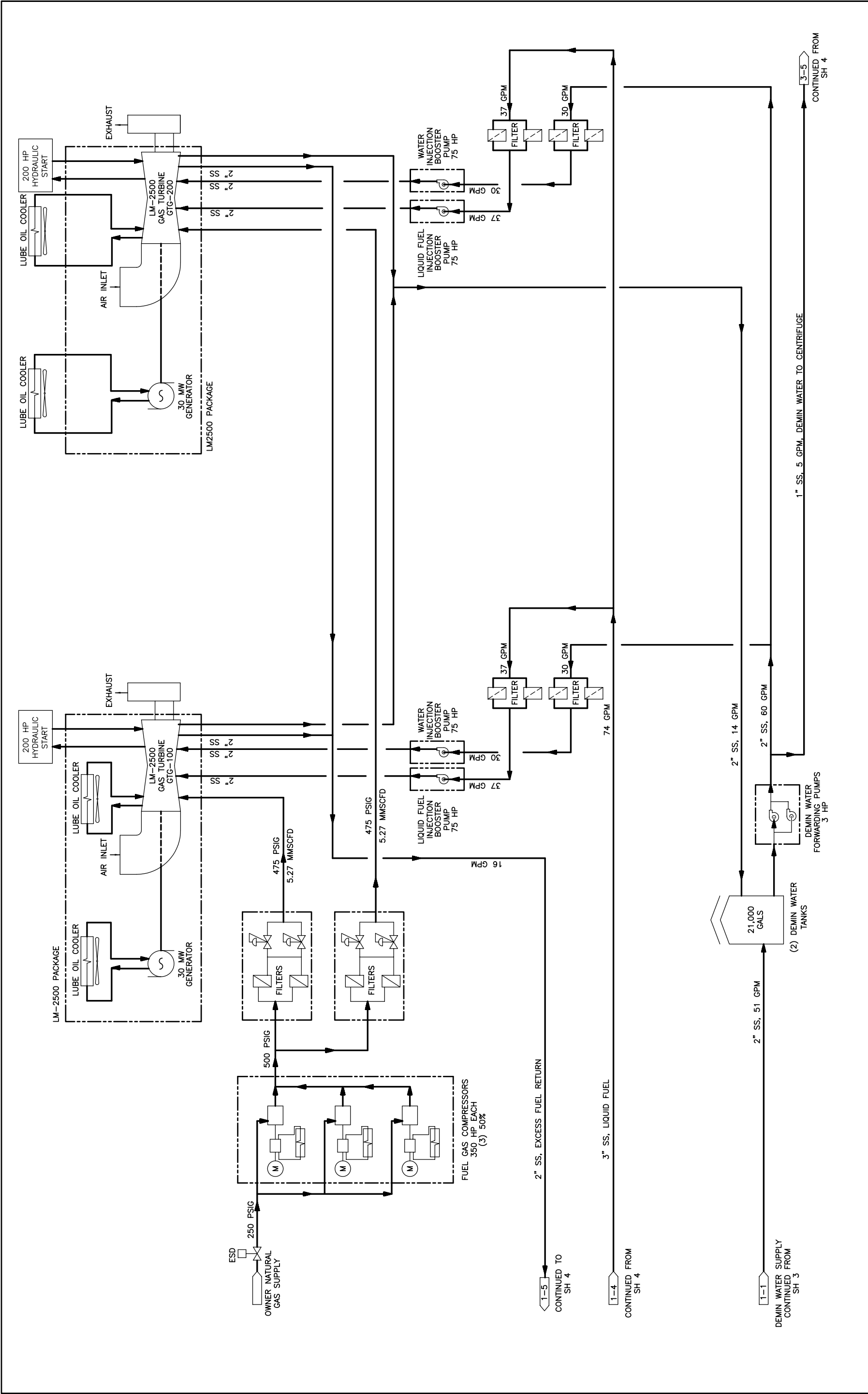
60

NEW TRANSMISSION POLE LOCATION.



GRAPHIC SCALE

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| CUSTOMER INFORMATION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| REVISED | CUSTOMER INFORMATION | | | | | | | | | | ProEnergy EPC Services, LLC | | | | | | | | | | | | | |
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| | | | | | | | | | | | PROCESS FLOW DIAGRAM | | | | | | | | | | | | | |
| | | | | | | | | | | | TWO (2) LM-2500 GENERATOR UNITS | | | | | | | | | | | | | |
| | | | | | | | | | | | TACOA POWER PLANT | | | | | | | | | | | | | |
| | | | | | | | | | | | TACOA JOB NO. | DWG NO. | SH NO. | REV | | | | | | | | | | |
| | | | | | | | | | | | T9003-A & B | 50-001 | 1 | A | | | | | | | | | | |
| | | | | | | | | | | | VENEZUELA | | | | | | | | | | | | | |

907 SOUTH DETROIT AVE
SUITE 1140
TULSA, OKLAHOMA 74120
OFFICE
FAX
www.proenergyservices.com

DRAWN

CHECK

DESIGN

PROJ ENGR

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SCALE

NONE

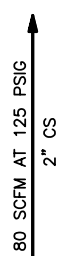
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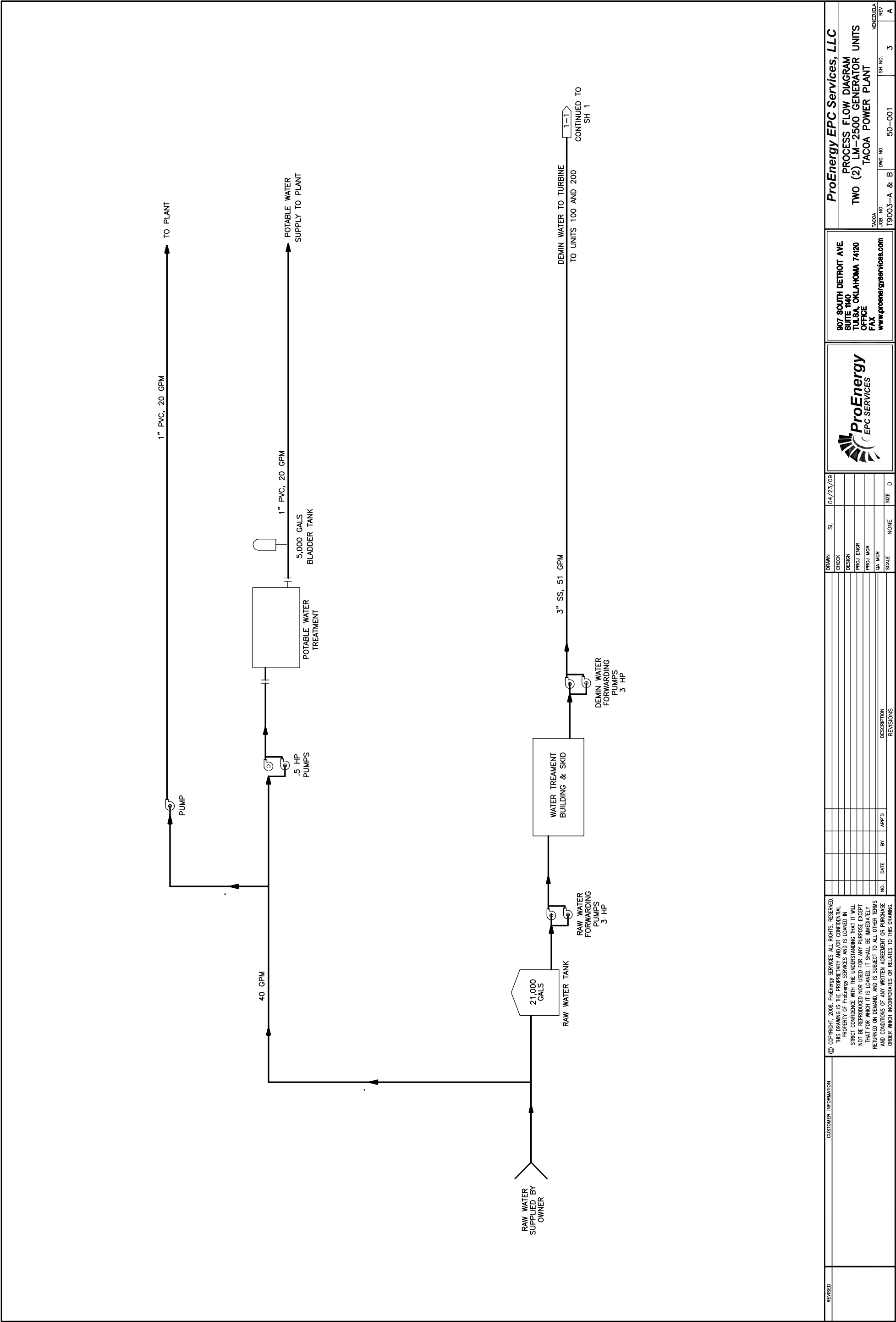
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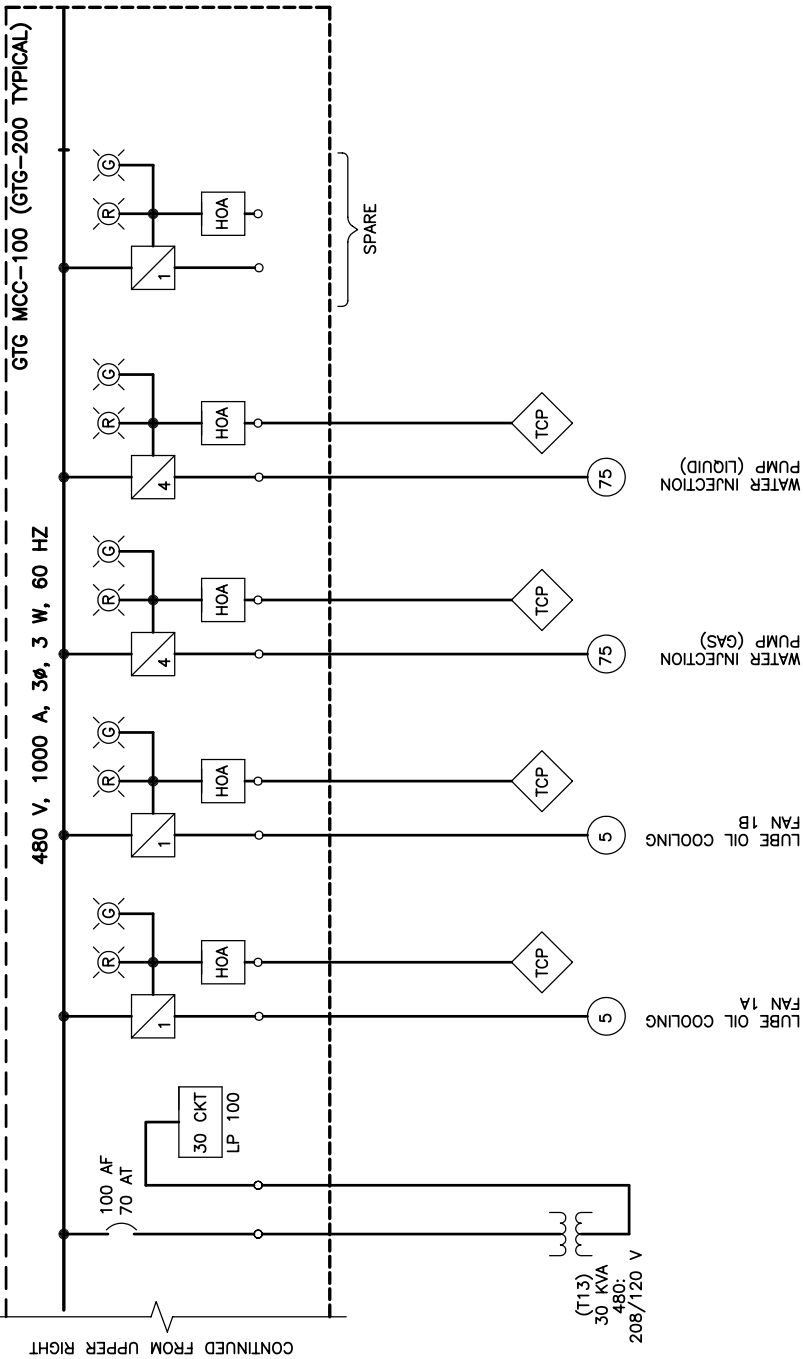
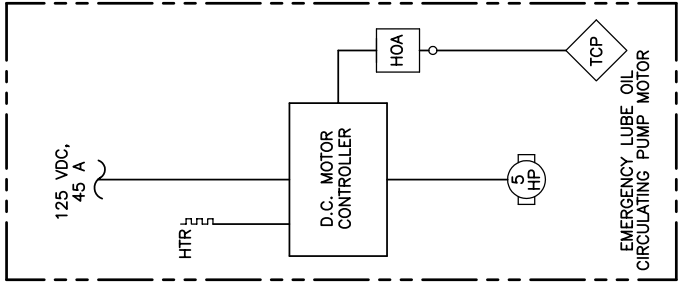
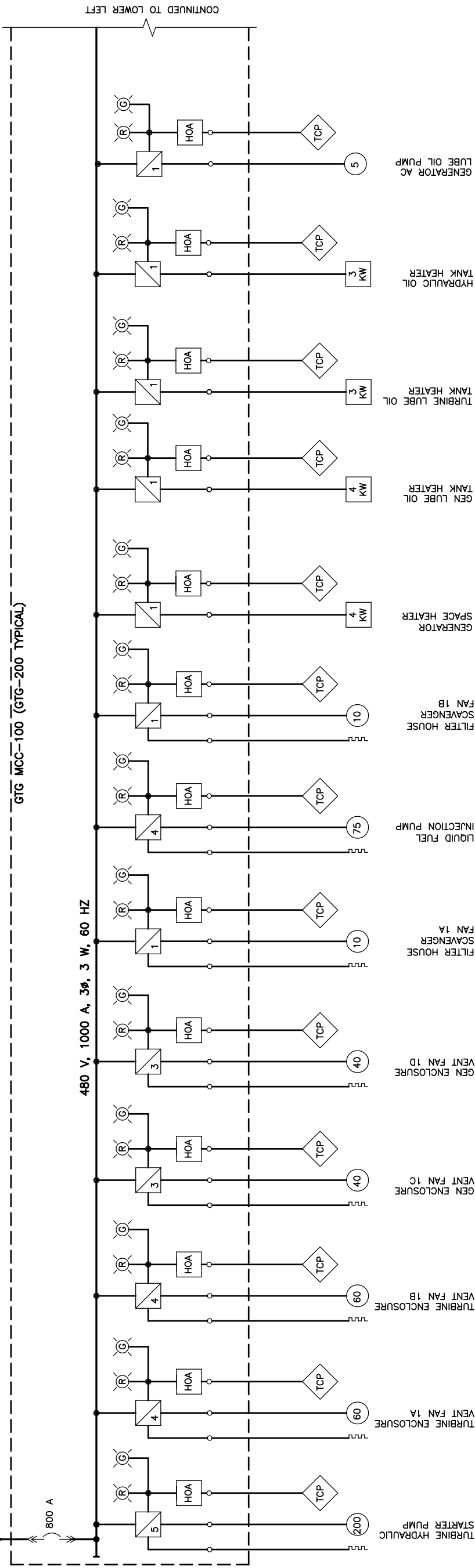
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|---------|--|----------------------|--|--|--|--|--|---------------------------------|--|--|--|--|--|---|--|--|--|
| REVISED | | CUSTOMER INFORMATION | | <p>© COPYRIGHT, 2008, ProEnergy SERVICES ALL RIGHTS, RESERVED</p> <p>THIS DRAWING IS THE PROPRIETARY AND/OR CONFIDENTIAL PROPERTY OF ProEnergy SERVICES AND IS LOANED IN STRICT CONFIDENCE WITH THE UNDERSTANDING THAT IT WILL NOT BE REPRODUCED, COPIED, OR IN ANY MANNER USED FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF ProEnergy SERVICES. IT IS TO BE RETURNED ON DEMAND, AND IS SUBJECT TO ALL OTHER TERMS AND CONDITIONS OF ANY WRITTEN AGREEMENT OR PURCHASE ORDER WHICH INCORPORATES OR RELATES TO THIS DRAWING.</p> | | <p>NO.</p> <p>DATE</p> <p>BY</p> <p>APP'D</p> <p>SCALE</p> <p>DESCRIPTION</p> <p>REVISIONS</p> | | <p>NON</p> <p>SIZE</p> <p>D</p> | | <p>DRAWN</p> <p>SL</p> <p>04/23/09</p> | |  <p>ProEnergy EPC SERVICES</p> | | <p>907 SOUTH DETROIT AVE. SUITE 140 TULSA, OKLAHOMA 74120 OFFICE FAX www.proenergyservices.com</p> | | <p>ProEnergy EPC Services, LLC</p> <p>PROCESS FLOW DIAGRAM TWO (2) LM-2500 GENERATOR UNITS TACOA POWER PLANT</p> <p>TACOA JOB. NO. T9003-A & B DWG. NO. 50-001 REV. 2 A VENEZUELA</p> | |
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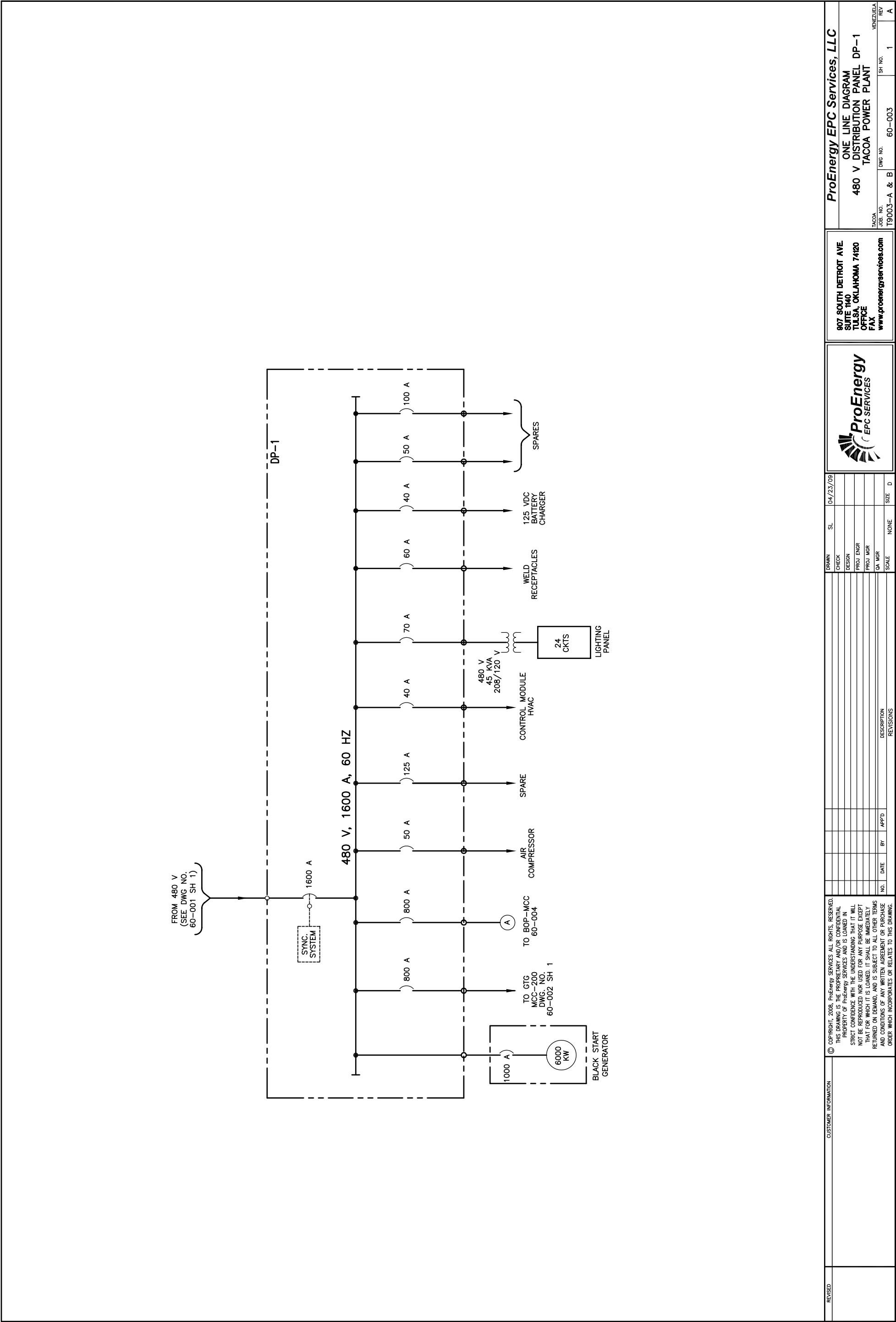


60-001 INCOMING POWER
SH 1 FOR GTG MCC-100
60-003 INCOMING POWER
SH 1 FOR GTG MCC-200

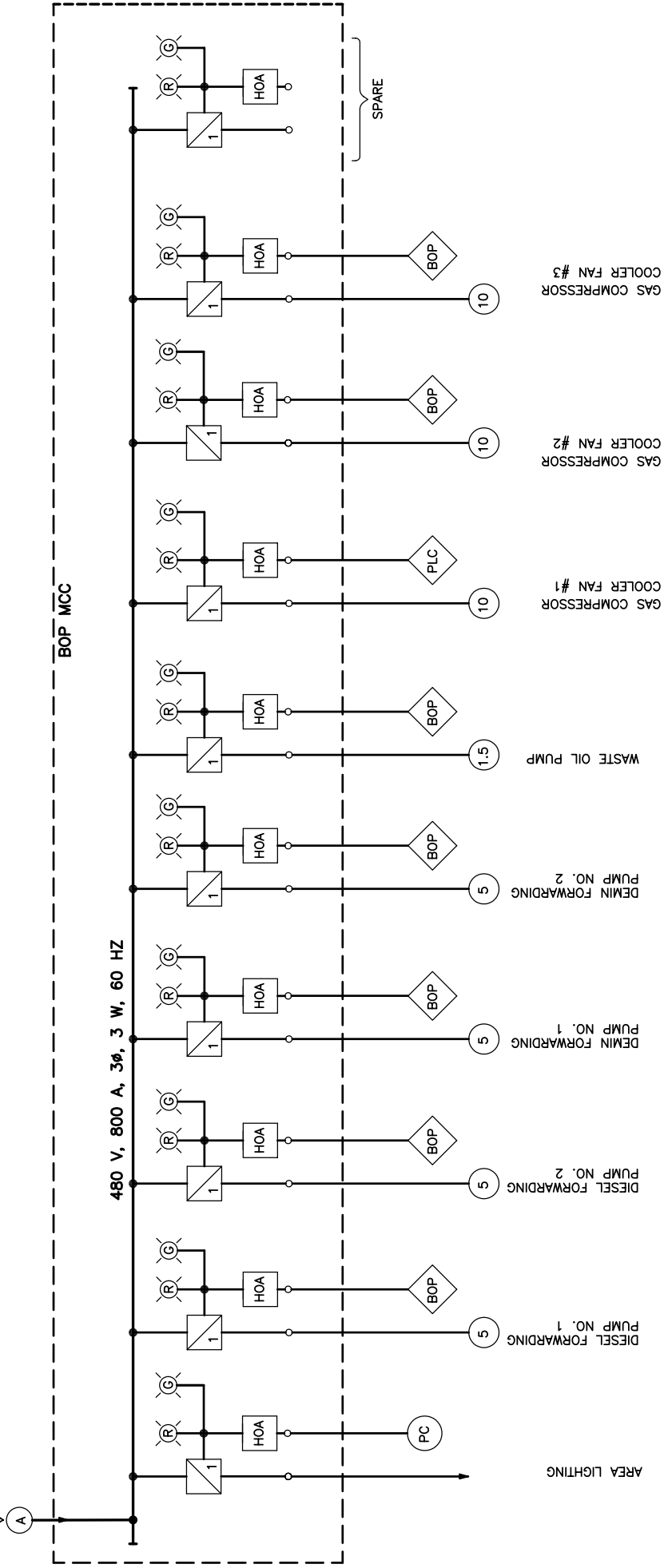


TYPICAL FOR TWO (2) UNITS

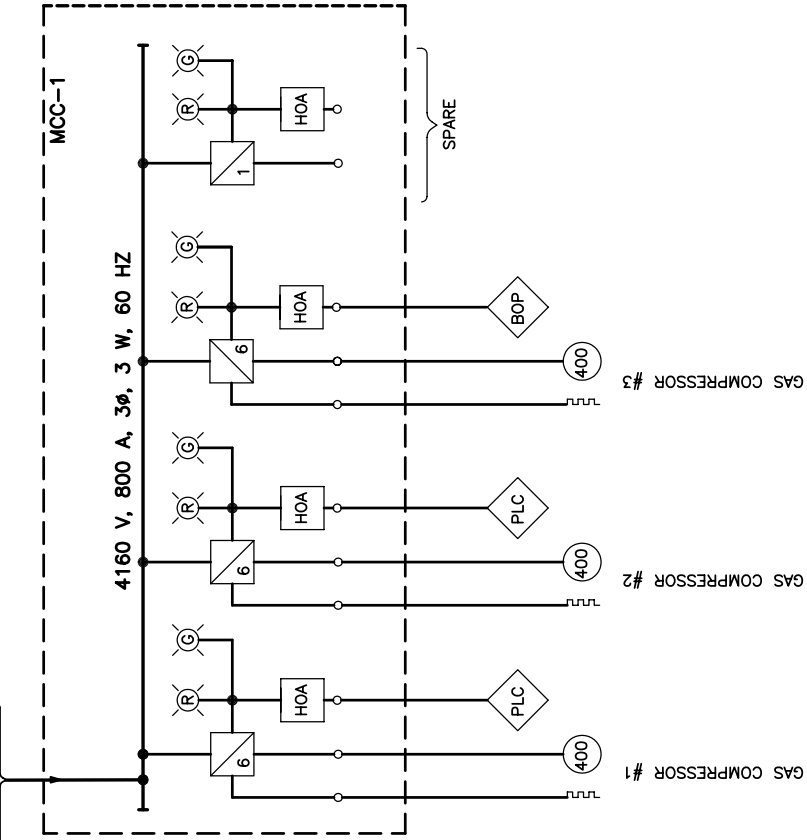
| REVISED | | CUSTOMER INFORMATION | | | | | | | | | | DRAWN | | | | SL | | | | 04/23/09 | | | | ProEnergy EPC Services, LLC | | | |
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| | | | | | | | | | | | | PROJ ENGR | | | | | | | | | | | | TACOA POWER PLANT | | | |
| | | | | | | | | | | | | QA MGR | | | | | | | | | | | | TACOA | | | |
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INCOMING POWER
60-003 SH 1

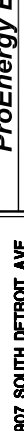


INCOMING POWER
60-001 SH 1



LEGEND:

- COMBINATION STARTER (BREAKER WITH MOTOR OVER LOADS)
- COMBINATION CONTACTOR (BREAKER NO MOTOR OVER LOADS)
- HAND-OFF-AUTO SWITCH
- MOTOR
- HORSEPOWER (HP)
- INDICATING LIGHT
- COLOR
- TURBINE CONTROL PANEL
- MOTOR SPACE HEATER

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 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| © COPYRIGHT, 2008, ProEnergy SERVICES. ALL RIGHTS RESERVED. THIS DRAWING IS THE PROPRIETARY AND/OR CONFIDENTIAL PROPERTY OF ProEnergy SERVICES AND IS LOANED IN STRICT CONFIDENCE WITH THE UNDERSTANDING THAT IT WILL NOT BE REPRODUCED NOR USED FOR ANY PURPOSE EXCEPT THAT FOR WHICH IT IS LOANED. 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T9003-A & B | | | | | | | | | | DWG NO. 60-004 | | | | | | | | | | SH NO. 1 | | | | | | | | | | REV A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 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Section 12.0 Appendix (Later)

- 12.1 Site Meteorological Data (By Owner)**
- 12.2 Site Location Map (By Owner)**
- 12.3 Raw Water Analysis (By Owner)**
- 12.4 Parasitic Loads (Later)**
- 12.5 Fuel Gas Specification (Later)**
- 12.6 Demin Water Specifications (Later)**
- 12.7 Soils Report (BY Owner)**
- 12.8 Major Equipment Specifications (Later)**
 - 12.8.1 LM2500 PE Gas Turbine Generator**
 - 12.8.2 Fuel Gas Compressors**
 - 12.8.3 Water Treatment System**
 - 12.8.4 Liquid Fuel Centrifuge**
 - 12.8.5 Oily Water Separator**
 - 12.8.6 Instrument Air Compressor**
 - 12.8.7 Plant DCS System (By ProEnergy EPC)**