PLAINTIFF'S EXHIBIT

GE-87

PUBLIC SERVICE COMPANY OF COLORADO
ARAPAHOE STEAM ELECTRIC STATION
1950-51 88,000 KW INSTALLATION
1951 44,000 KW EXTENSION

DETAIL OF MAJOR EQUIPMENT

Turbine-Generator #1 N. Y. 771

General Electric Company

One ASME-AIEE preferred standard hydrogen cooled condensing turbine generator unit consisting of the following:
One 40 000 kw nominal rating, single cylinder, 3600 rpm, impulse type, condensing turbine for a steam condition at the throttle of 850 psig, 900°F. and an average back pressure of 2.5" Hg. The turbine capability at maximum guaranteed steam flow of 397 000 lbs/hr to throttle is 44 000 kw with 3.5" Hg. absolute back pressure, with 5 stage bleeding for feedwater heating and evaporation.
One 40 000 kw nominal rating, 0.8 short circuit ratio, 3600 rpm, 3 phase, 60 cycle, 13 800 volts, hydrogen cooled generator with capability of 46 000 kw @ 0.85 power factor and 15.0 psig hydrogen pressure.
One direct connected 145 kw, 250 volts main exciter with 4 kw, 250 volts pilot exciter.
Necessary hydrogen control and seal oil equipment, oil coolers, recorders, regulator, and other accessories.

Turbine-Generator #2 N. Y. 772

Westinghouse Electric Corporation

One ASME-AIEE preferred standard hydrogen cooled condensing turbine generator unit consisting of the following:
One 40 000 kw nominal rating, single cylinder, 3600 rpm, impulse type, condensing turbine for a steam condition at the throttle of 850 psig, 900°F. and an average back pressure of 2.5" Hg. The turbine capability at maximum guaranteed steam flow of 397,000 lbs/hr to throttle is 44 000 kw with 3.5" Hg. absolute back pressure, with 5 stage bleeding for feedwater heating and evaporation.
One 40 000 kw nominal rating, 0.8 short circuit ratio, 3600 rpm, 3 phase, 60 cycle, 13 800 volts, hydrogen cooled generator with capability of 46 00 kw @ 0.85 power factor and 15.0 psig hydrogen pressure.
One direct connected 155 kw, 250 volts main exciter with 2.5 kw, 250 volts pilot exciter.
Necessary hydrogen control and seal oil equipment, oil coolers, recorders, regulator, and other accessories.

Boilers #1 and #2 N. Y. 773

Babcock and Wilcox Company

Two steam generating units, each capable of delivering 450 000 lbs/hr of 925 psig, 905°F. steam continuously of 480 000 lb/hr of 925 psig, 905°F. steam for a four hour period when burning pulverized Colorado lignite, natural gas or a

combination of both. These steam generators are of the three drum vertical fired fired type with superheater and attemporator and imclude all necessary connecting ducts and flues. The services of an erecting superintendent are included with this order.
Also included with this order are the following:
One set of pulverizing equipment for Boiler No. 1 consisting of four Babcock and Wilcox type E 56 mills and four table type feeders with coal piping from feeders to mills, coal air piping from mills to burners and including Bailey air operated feeder controllers; air heaters of tubular type with five air passes and provided with two Diamond Power Specialty Corporation straight line cleaning device units; tubular mechanical dust collectors with hoppers; each boiler is provided with two forced draft fans of Sturdevant Division of Westinghouse Electric Corporation manufacture, each driven by an Allis Chalmers 300 hp, 1160 rpm motor; each boiler is provided with two induced draft fans of Sturdevant Division of Westinghouse Electric Corporation manufacture, each driven by an Allis Chalmers 700 hp, 705 rpm motor.

Condenser #1 N. Y. 774

Allis Chalmers Manufacturing Company Inc.

One thirty thousand sq. ft., two pass, horizontal surface condenser, 7/8" OD No. 18 gage phosphorized Admiralty tubes 26' effective length with divided water boxes and accessories as follows:
Two 31 000 gpm, vertical, YDVN-B, circulating water pumps, 75' total dynamic head complete with 800 hp, 3 phase, 2300 volt motor drive and coupling. Two 350 000 lbs/hr vertical CF2-ET sump type two stage condensate pumps to handle 115°F. water at a total dynamic head of 350', complete with 100 hp, 3 phase, 440 volt motors with couplings.
One twin element two stage size G22S steam jet air ejector with two primary and two secondary jets to operate at 850 lbs at 900°F. This ejector is of Allis Chalmers manufacture.

115 KV Oil Circuit Breakers N. Y. 775

Westinghouse Electric Corporation

Two oil circuit breakers, 800 amp, 115 kv, 60 cycle, type GM-4, "De-Ion" Grid, 3 pole, single throw, type "SAF-4" solenoid operated mechanism for 125 volt DC operation, mechanically and electrically trip free, for outdoor service. Interrupting rating 2,500,000 kva.
Included with one breaker is one type "PBA" bushing potential device of Westinghouse Electric Corporation manufacture.
Each oil circuit breaker is provided with six bushing type current transformers plus 3 extra type BYN bushing current transformers for the breaker used for generator No. 2.

Deaerators Nos. 1 & 2 N. Y. 777

Worthington Pump and Machinery Corporation

Two 400,000 lb/hr horizontal deaerating heaters equipped with stainless steel tubes and tube sheets, each having an oxygen guarantee of .005 cc/liter at 400,00 lb/hr, and .03 cc/liter at 527,000 lb/hr. Storage capacity is 110,000 lb each. Designed pressure 80 psig. These deaerators are complete with necessary valves, thermometers, gauges and float switches for high and low alarms.

Transformers N. Y. 778

General Electric Company

Three 16 667 kva, oil insulated, self cooled, 60 cycle, outdoor, single phase main transformers, provided for future addition of fans to increase rating to 22 500 kva. High voltage 66 675 with 4 full capacity taps, low voltage 13 200.

2400 V Switchgear N. Y. 7711

Westinghouse Electric Corporation

One 2400 v metal-clad switchgear assemblage, consisting of eleven type 50-DH-100, solenoid operated, air circuit breakers and associated equipment. This switch- is designated Unit 1.
One 2400 v metal-clad switchgear assemblage, consisting of six type 50-DH-100, solenoid operated, air circuit breakers, standby auxiliary bus disconnecting switches and associated equipment. This switchgear is designated "Common." All units have necessary associated equipment such as 2 pole AB breakers, cell switches, current and potential transformers, and on hinged instrument panel, relays, instruments, control switches and indicating lights.

Main Control Switchboard N. Y. 7712

Westinghouse Electric Corporation

One tunnel type main control switchboard consisting of ten duplex panels and one swinging bracket, all complete with instruments, relays, meters, control switches, etc., and are designated as follows:
Panel No. 1 for station battery and annunciators, Panel No. 2 for generator rotor temperature recorders, Panel No. 3 for Gen. stator and gas temperature recorders, Panel No. 4 for generator No. 1 control, Panel No. 5 for auxiliary power transformer No. 1, Panel No. 6 for standby auxiliary power transformer, Panel No. 7 for auxiliary power transformer No. 2, Panel No. 8 for generator No. 2 controls, Panel No. 9 for Leetsdale Transmission lines No. 1 and 2, Panel No. 10 for south terminal transmission lines No. 1 & 2, Panel #11 for frequency control and swinging bracket for synchronizing instruments.

2400 V Switchgear N. Y. 7713

Westinghouse Electric Corporation

One 2400 v metal-clad switchgear assemblage, consisting of 16 type 50-DH-150, solenoid operated, air circuit breakers and associated equipment. This switchgear is designated Unit No. 2

Soot Blower Air Compressors N. Y. 7714

Worthington Pump and Machinery Corporation

Two 15/6 X 12 Worthington type DC-2 horizontal, duplex, two stage, double acting, compressors with by-pass control. Each compressor is direct connected to a 150 hp, 300 rpm, 3 phase, 60 cycle, 2300 volt, Allis Chalmers synchronous motor and includes the following accessories:
One motor generator set having a 5 KW generator and driven by a 7½ hp, 3 phase, 60 cycle, 440 volts, 1800 rpm Allis Chalmers motor.

480 Volt Power Center No. 2 N. Y. 7715

Westinghouse Electric Corporation

One 480 V power center consisting of 10 compartments including one spare and one future compartment. Installed in compartment 1 of this power center is one 1,000 kva, 3 phase, 60 cycle, 2400/480 volt, ASL dry type transformer connected delta delta.

Boiler Feed Pumps N. Y. 7716

Byron Jackson Company

Six 3" X 10", 9 stage, type SHB, double case Boiler Feed pumps, without motors, for operating at 3600 rpm and delivering 260 000 lbs. per hour at a temperature of 285°F. against a total dynamic head of 2900 feet.
Six Republic Boiler Feed Pump by-pass recirculating valves, 1½" size, 1500 lb working pressure.
Six Ascove type P-39 ½" three way Atlas solenoid valves with automatic reset.
Six position indicating switches, Westinghouse type HD, double pole, double throw switches mounted on by-pass valves.
Six differential pressure switches, Republic model S6314, with one normally open and one normally closed contact.
Eighteen Edwards Fig. No. 3588 shut-off and equalizing valves, 1500 lbs. standard for use with the 6 pressure switches.
Six 6" flow nozzles well type SGA-1029.
Six pair No. 844-50 water fittings for the flow nozzles.
All electrical control equipment is suitable for 125 V DC operation.

Auxiliary Transformer N. Y. 7717

Westinghouse Electric Corporation

Two 6000 kva, type OA, OISC, three phase, 60 cycle, outdoor auxiliary power transformers with provision for future addition of air blast fans to increase capacity to 8000 kva, high voltage 13 800 delta with four full capacity taps, low voltage 2400/4160 wye.

115 KV Oil Circuit Breakers N. Y. 7718

Westinghouse Electric Corporation

Three 800 amp, 115,000 Volt, 60 cycle, type GM-4 "De-Ion" Grid oil circuit breakers, 3 pole, single throw, type SAF-4, solenoid operated mechanism for 125 v DC operation, mechanically and electrically trip free. Interrupting rating 2,500,000 kva.
Each breaker is provided with 6 type BYM bushing current transformers, multi-ratio 600/5 amperes.
Two of the breakers are provided with type PBA, style No. 1572102 bushing potential devices and 3 additional type BYM multi-ratio bushing current transformers.

Transformers N. Y. 7719

Westinghouse Electric Corporation

Three 16 667 kva, OISC, type OA, 60 cycle, single phase main transformers with provision for future addition of air blast equipment to increase capacity to 22,250 kva, high voltage 66 675 delta with four full capacity taps, low voltage 13 800 volts delta.
One 6000 kva, oil insulated self cooled, 3 phase, 60 cycle, auxiliary transformer with provision for future installation of fans to increase rating to 7500 kva. High voltage 13 800 with four full capacity taps, low voltage 2400, both sides connected delta.

Condenser No. 2 N. Y. 7722

Westinghouse Electric Corporation

One 30 000 sq. ft. horizontal, two pass, divided water box surface condenser, fitted with 7/8" OD No. 18 phosphorized Admiralty tubes, 26' effective length furnished by others.
One twin element two stage air ejector operating with steam at 850 lbs., 900°F. capable of evacuating 150 lbs/hr of air and water vapor.
Two condensate pumps capable of delivering 350 000 lbs/hr of condensate at 115°F. against a total dynamic head of 350' and driven by 100 hp, 1200 rpm, 3 phase, 60 cycle, 440 volt Allis Chalmers motor furnished by others. One four inch Priming Ejector capable of removing 275 cubic feet of free air per minute with vacuum of 18" hg.

Pulverizers N. Y. 7727

Combustion Engineering Incorporated

Four bowl type, size 533A pulverizers with integral exhausters; nominal capacity each mill 20 700 lbs. lignite per/hour, each complete with coal feeder, coal feeder mechanism, fineness regulator, flexible coupling for motor drive, one 250 hp, 1200 rpm, 3 phase, 440 volt motor for driving the pulverizer and one 1 hp, 1800 rpm, 3 phase, 440 volt motor for driving each feeder.
Four sets of burner piping and ducting as follows:
Coal and air pipe from pulverizers to burners including flexible connections, sampling connections, coal and air shutoff valves; coal pipe from feeder to mill; hot air duct and tempering air duct to pulverizers.

Extraction Feedwater Heaters N. Y. 7728

Struthers Wells Corporation

Eight extraction heaters for use with Units 1 & 2 as follows:
One fourth stage high pressure heater for use with Unit 1. U bend tube, head on top, vertical heater having 1211 sq. ft. of heating surface and designed for 25.7 KB per hour heating load.
One seventh stage high pressure heater for use with Unit No. 1. U bend tube, head on top, vertical type heater having 1140 sq. ft. of heating surface and designed for 23.5 KB per hour heating load.
One fifteenth stage intermediate pressure heater for use with Unit No. 1 U bend tube, head on top, vertical type heater having 1014 sq. ft. of heating surface and designed for 21.6 KB per hour heating load.

One eighteenth stage low pressure heater for use with Unit No. 1. This heater is mounted horizontally in the condenser exhaust connection and has 1214 sq. ft. of heating surface and designed for 17.16 KB per hour heating load.
One seventh stage high pressure heater for use with Unit No. 2. U bend tube, head on top, vertical type heater having 1211 sq. ft. of heating surface and designed for 25.7 KB per hour heating load.
One fifteenth stage high pressure heater for use with Unit No. 2. U bend tube, head on top, vertical type heater having 1140 sq. ft. of heating surface and designed for 23.5 KB per hour heating load.
One twenty-sixth stage intermediate pressure heater for use with Unit No. 2. U bend tube, head on top, vertical type heater having 1014 sq. ft. of heating surface and designed for 21.6 KB per hour heating load.
One twenty-ninth stage low pressure heater for use with Unit No. 2. This heater is mounted horizontally in the condenser exhaust connection and has 1214 sq. ft. of heating surface and designed for 17.16 KB per hour heating load.
The fifth extraction stage on each of Units 1 & 2 turbine-generators is blanked off.

Evaporators N. Y. 7730

Griscom-Russell Company

Two No. 126-A-240 G-R horizontal J-2, bent tube, submerged type, removable two bundle pattern evaporators, each having 650 sq. ft. of heating surface and designed for 13,500 lbs. per hour net vapor output.
Each evaporator includes a Worthington vertical, tray, open type deaerating preheater and vent condenser, 20000 lbs/hr.

480 V Power Center Unit No. 1 N. Y. 7732

Westinghouse Electric Corporation

One 480 V, indoor type power center designated 1-A, consisting of the following:
One 10 compartment metal-clad switchgear including one spare compartment. In compartment No. 1 is one 1000 kva, 3 phase, 60 cycle, 2400/480 volts, type ASL, dry type transformer connected delta delta.
One 480 volt, indoor type power center designated 1-B consisting of the following:
One 10 compartment metal-clad switchgear including one spare compartment. Installed in compartment 10 is one 1000 kva, 3 phase, 60 cycle, 2400/480 volts, type ASL, dry type transformer connected delta delta.
One 480 V, indoor power center designated "Common" for use with both units 1 & 2 consisting of the following:
One 6 compartment 480 volt metal-clad switchgear. In compartment No. 1 is one 1000 kva, 3 phase, 60 cycle, 2400/480 volts, type ASL, dry type transformer connected delta delta.
All of the metal-clad units for motor operation contain a type DB-25, 3 pole, single throw, air circuit breaker and necessary ammeters, voltmeters, current transformers, pot transformers, etc., for operation of each motor circuit.

480 Volt Control Centers N. Y. 7733

Westinghouse Electric Corporation

Seven items of 480 volt metal-clad control centers as follows:

One 13 compartment 480 volt control center designated 1-A.
One 13 " " " " " " 1-B.
One 21 " " " " " " Common.
One 35 " " " " " " for ventilation Unit 1-2.
One 8 " " " " " " for motor operated valves.
One 12 compartment (in two sections ) 125 volt DC control center for DC motor operated valves.
One 16 compartment 480 volt control center designated for pump house motor controls.
Each of the control center compartments contains a combination line starter type similar to Westinghouse class 11-216 or 11-206, and AB circuit breaker with thermal time limit overload and instantaneous short circuit protection.
Miscellaneous Remote mounted Equipment, such as pushbuttons, indicating lamps, alarms, etc., are provided for external portions of the circuits.

480 Volt Control Centers N. Y. 7734

Westinghouse Electric Corporation

Two items of 480 volt metal-clad control centers for use with Unit No. 2 as follows:
One 12 compartment 480 volt control center designated 2-A.
One 14 " " " " " " 2-B.
Each of the compartments in these control centers are provided with a combination line starter type similar to Westinghouse class 11-216 or 11-206 and an AB circuit breaker with thermal inverse time limit overload and instantaneous short circuit protection.

Cooling Tower Power Center N. Y. 7735

Westinghouse Electric Corporation

One 480 volt cooling tower power center designated No. 1 consisting of the following:
One 5 compartment 480 volt metal-clad control center for outdoor service. The fifth compartment is provided with a 10 kva lighting transformer and a Westinghouse "A2B-2" control panel board for controlling the lights on and around the cooling towers.
One 4 compartment 480 volt metal-clad control center designated No. 2.
Each power center is provided with one 500 kva, OISC, three phase, 60 cycle, 2400/480 volts transformer connected delta delta. Each transformer is throat connected to each power center and is designed for outdoor service.

Coal Handling Power Center N. Y. 7736

Westinghouse Electric Corporation

One 24 compartment, 480 volt, metal-clad power center for coal handling equipment. One 500 kva, OISC, three phase, 60 cycle, 2400/480 volts, delta delta connected transformer. This transformer islocated outside the crusher house, but is throad connected to the power center located inside the crusher house. Mounted in the power center compartments are combination line starters of various sizes similar to Westinghouse class 11-21y or 11-206 with AB circuit breakers with thermal inverse time limit overload and instantaneous short circuit protection. Also mounted in this power center is a 10 circuit lighting panel

and one 10 kva lighting transformer for control of the lights in and on the crusher house.

Lubricating Oil Filtering and Storage System N. Y. 7737

Bowser, Incorporated

Two turbine oil conditioning systems, one each for General Electric turbine No. 1 and Westinghouse Turbine No. 2, consisting of the following:
Two No. 3 Bowser Figure 832-P turbine oil conditioners with precipitation compartment, automatic water ejector, removable filter units, two figure 836-10 cellulose polishing filters, vent fan for moisture removal from all compartments and all necessary gauges, thermometers, etc. Filtering capacity 540 gal. per hour.
Two 8 GPM Bowser figure 841-A positive displacement rotary oil pump direct connected to a one hp, 3 phase, 60 cycle, 440 volt, 850 rpm motor.
One special 825-2 Bowser site overflow fitting for use with Unit No. 1 conditioner.
One 2" figure 55-A double window flow sight for use with Unit No. 2 conditioner.
One 7000 gallon, 2 compartment, Bowser figure 363 oil storage tank, Each compartment has a capacity of 3500 gallons and is provided with necessary bolted covers, oil level gauges, and pipe connections.
One 50 GPM Bowser 1½ X positive displacement rotary oil transfer pump direct connected to a three hp, 3 phase, 60 cycle, 440 volt, 1750 rpm motor.
The above storage tank and transfer pump are for use with both units 1 & 2.

Cooling Tower N. Y. 7738

The Marley Company Incorporated

One Marley cooling tower, wood filled, induced draft, double flow type, overall size 63' x 193' x 39', capacity 62 000 gpm. Tower to have 8 cells, with each cell having one 20" water inlet, one 240" diameter fan with capacity of 635 000 cfm driven through a reduction gear by a 60/15 hp, 3 phase, 60 cycle, 1760/870 rpm, 440 volt motor which is furnished by others and is not a part of this order.

Diesel Electric Locomotive N. Y. 7739

General Electric Company

One 45 ton, 4 axle, 300 hp, standard gauge, diesel electric locomotive equipped with the following:
Two Cumins Diesel engines HBI-600, two traction motors, GE-733, two traction generators GT-1503, two auxiliary generators 2023-G (Leece-Neville) control single station-single unit, air brake 14EL independent and automatic.

Miscellaneous Pumps N. Y. 7742

Worthington Pump & Machinery Corporation

Four high pressure drain pumps, type 2HL-10, each having a capacity of 150 GPM of 275°F water against a total dynamic head of 70 feet, driven by a 5 hp, 60 cycle, 440 volt, 3 phase, 1800 rpm motor furnished by others.

Four low pressure heater drain pumps, type 2UC-1, each having a capacity of 92 GPM of 173°F water against a total dynamic head of 350 feet, each driven by a 20 hp, 3 phase, 60 cycle, 440 volt, 1800 rpm motor furnished by others.
Two condensate transfer pumps, type 2½-CNE-82, each having a capacity of 300 GPM of 100°F water against a total dynamic head of 275' and driven by a 40 hp, 3 phase, 60 cycle, 440 volt, 3600 rpm motor, furnished by others.
Two service water pumps type 12 QHE-2 vertical turbine, each having a capacity of 2000 gpm at 100 feet head of cold water, and driven by a 75 hp, 3 phase, 60 cycle, 440 volts, 1750 rpm motor furnished by others.
Two evaporator feed pumps type 1½-CNE-62, single stage, single suction, volute, each pump having capacity of 65 gpm, of 50° to 75°F water with 55' suction head against a total dynamic head of 150', and driven by a 5 hp, 3 phase, 60 cycle, 440 volt, 3450 rpm motor furnished by others.

Station Crane N. Y. 7748

Manning, Maxwell and Moore

One Shaw box type "S" four motor indoor traveling electrically operated crane with main hoist capacity of 100 tons and auxiliary hoist capacity of ten tons. The main hoist has 16 parts to its cable and the auxiliary hoist has four parts to its cable. All motors are wound rotor type for variable speeds and of capacities as follows:
Main hoist 50 hp, auxiliary hoist 20 hp, trolley travel 20 hp, bridge travel 40 hp, all operating at 440 volts, 3 phase, 60 cycle.

Water Softening Equipment N. Y. 7759

The Permutit Company

Two Permutit 60 gpm sodium zeolite water softening units complete with valves and piping, salt storage tank and brine measuring tank.

Station Battery N. Y. 7762

The Electric Storage Battery Company

One storage battery 60 cell, Tytex type, positive plates, style ECE29, catalogue No. 33972, 560 ampere hours, 8 hour capacity, complete with rack sections, catalogue number 37312 and 37313, necessary intercall connectors, cell numbers, hydrometer syringe, thermometer, and connector wrenches.

Circulating Water Treating Equipment N. Y. 7763

Wallace and Tiernan Products Inc.

One Wallace and Tiernan semi-automatic solution feed vacuum chlorinator, type A-586, with a capacity of 2000 lbs. per 24 hours for chlorinating a flow of 62,000 gpm. Equipment is complete with injector valves pilot operating chlorine pressure valves, rubber lined valves and piping and program electrically operated control panel.

Ash Handling Equipment N. Y. 7766

United Conveyor Corporation

Two Ash Pit Hoppers and Accessories consisting of the following:
Two 24 x 24" hydraulic cylinder operated vertical lifting doors, 14 water jet nozzles, two 20" eccentric clinker crushers driven by two 3 hp electro-fluid gear motors, two molded D refractory cement linings for 2 ash pit hoppers and all necessary internal piping & lighting for these hoppers. Also necessary 8" pipe, jet pulsion pumps, sluice gates, hydroveyor exhausters, air separators, 5" fly ash conveyor pipe, pipe fittings, & control panel board for complete fly ash collecting & sluicing system for two boilers.

Coal Handling Equipment N. Y. 7768

Webster Manufacturing Inc.

One coal handling and preparation system consisting of the following:
One apron feeder No. 1-A, 48" wide by 13' long having a capacity of 100 tons per hour.
One apron feeder No. 1-C, 48" wide by 13' long having a capacity of 100 tons per hour.
One reciprocating feeder No. 1-B, 48" wide by 6'7" long having a capacity of 300 tons per hour.
One reciprocating feeder No. 1-E, 48" wide by 6'7" long having a capacity of 300 tons per hour.
One conveyor No. 2-A, 42" wide belt conveyor 210' between center, present capacity 300 tons per hour, future capacity 600 tons per hour at increased speed.
One conveyor No. 3, 36" wide belt conveyor 330' between centers, present capacity 300 tons per hour, future capacity 600 tons per hour at increased speed.
One conveyor No. 4, 36" wide reversible shuttle belt conveyor, 114'6" between center, present capacity 300 tons per hour, future capacity 600 tons per hour at increased speed. Two wing belt conveyors Nos. 4A and 4B, 36" wide reversible belt conveyors, 17'10½" between centers. Present capacity of each 300 tons per hour, future capacity of each 600 tons per hour at increased speed.
One conveyor No. 5, 36" wide reversible belt conveyor, 150' between centers, present capacity 300 tons per hour, future capacity 600 tons per hour at increased speed. This conveyor is for conveying coal to two outside storage areas.
One steel structure designated crusher house for housing the following equipment:
One 48" diameter 43" face magnetic head pulley assembly for head of conveyor belt No. 2-A.
One Pennsylvania crusher size TK-11-38, slow speed granulator, capacity 300 tons per hour of 8" by 0" coal crushed to 1½" by 0" product.
One Robins single deck vibrating screen model 72 by 168, style C-11, capacity 300 tons per hour, driven by a 10 hp, 1740 rpm, 3 phase, 60 cycle, 440 volt motor furnished by others.
Necessary chutes, dampers and guides for conveying the coal from the top of the crusher house to the bottom where it is discharged onto conveyor belt No. 3.
All motors driving this equipment are furnished by others.

Sulphuric Acid Feeding Equipment N. Y. 7769

Permutit Company

One sulphuric acid feeding equipment for the circulating water system consisting of the following:
Two Milton Roy Type AMD-1-22-48 (special) pumps, each having a capacity of 8.7 GPH concentrated sulphuric acid and pumping against a discharge head of 50 psi.
One 4" diameter by 4' long rubber lined baffled mixing chamber and one Carpenter No. 20 stainless steel acid diffuser.
One Japsco Model 903 all stainless steel self-priming impeller pump for sampling purposes, having a capacity of 1.8 GPM against a total head of 50', driven by an Allis Chalmers ¼ hp totally enclosed motor, operating on 440 volts, 3 phase, 60 cycle current at 1750 rpm.
One standard Leeds and Northrup panel 24" wide by 72" high on which are mounted and wired one Leeds and Northrup Model 1 "S" continuous strip chart micromax pH indicating and recording controller, one micromax electric controlled relay and automatic droop corrector unit, one 11 pole transfer switch double throw, fixed position, non-spring return for switching pH control from acid pump No. 1 to acid pump No. 2.
One Leeds and Northrup pH cell complete with reference electrode, glass electrode, solution, spare reference electrode, spare glass electrode and accessories.
Sufficient lead lined steel pipe and fittings for connecting the rubber lined baffled mixing chamber to the acid diffuser distributor in the circulating water tunnel.

Boiler and Turbine Gage Boards N. Y. 7770

Bailey Meter Company

Two main boiler instrument and control panels QXA-X, each 21'7" long by 8'6" high by 5' deep without top enclosure but with end enclosures with doors. Instruments for the operation and control of the boilers and their auxiliaries are mounted on these boards.
One boiler common control panel type QFA-X, 7' wide by 8'6" high by 5' deep installed between the two boiler gauge boards and upon which are mounted those instruments common to both Boilers 1 and 2.
One pump house control panel type QFA-X, 3'6" wide by 8'6" high by 3' deep upon which are mounted the instruments and controls for the service water pumps in the pump house and the river well and shallow well pumps outside the pump house.
Two turbine instrument and control panels type QFA-X, each 19'8" long by 8'6" high by 5' deep, without top but with two end doors and upon which are mounted the controls and instruments of the turbo-generator units and their auxiliaries. Instruments and controls for the conbustion control system and the feed water control system are also included in this order.

Control and Station Air Compressors N. Y. 77101

Gardner Denver Company

Each compressor is complete with Gardner Denver Class HD-7A duo-matic control panel, V belt drive with belts and motor sheave, combination intake filter and silencer.
Two model D102 clean air after-coolers, each complete with moisture and air

separator, safety valves, pressure gauges, site flow indicator and necessary valves and piping. Each after-cooler is capable of cooling a maximum of 150 cfm free air at 90 psi to within 15°F of the temperature of the incoming cooling water.
One model WBQ 6' x 4-3/4" x 5", two stage, vertical, water cooled air compressor complete with combination filter intake silencer, tubular inter-cooler, suction unloading valves, Gardner Denver class HD-7A duomatic control panel, V belt drive including belts and motor sheave necessary piping and valves.
One model B-134 clean air after-cooler complete with moisture and oil separator, safety valve, pressure gauge, site flow indicator, and necessary pipe and fittings. The after-cooler has a capacity to coll 240 cfm free air at 100 psi to within 15°F of the temperature of the incoming cooling water.
Three 36" diameter by 8' high, vertical, ASME National Board Air receiver tanks for 125 psi working pressure complete with necessary safety valve, pressure gauges and fittings.

Miscellaneous Vertical Pumps N. Y. 77102

Layne-Western Company

Two Layne and Bowler Inc. No. 12 RKHC, vertical, single stage river well pumps, each having a capacity of 1000 gpm, 32° to 70°F river water against a total dynamic head of 55'. Each pump is driven by a 20 hp, 3 phase, 60 cycle, 440 volt, 1800 rpm, vertical hollow shaft General Electric Motor for outdoor service.
One Layne and Bowler Inc. No. 12 RKMC, vertical, two stage shallow well pump No. 1 having a capacity of 850 gpm, 40° to 60°F well water against a total dynamic head of 95' and driven by a 30 hp, 3 phase, 60 cycle, 440 volt, 1800 rpm, vertical hollow shaft, totally enclosed, fan cooled General Electric Motor.
One Layne and Bowler Inc. No. 12 RKLC vertical, single stage shallow well pump No. 2 having a capacity of 700 rpm, 40° to 60°F well water against a total dynamic head of 50' and driven by a 15 hp, 3 phase, 60 cycle, 440 volt, 1800 rpm, vertical, hollow shaft, totally enclosed, fan cooled General Electric Motor.
Two Layne and Bowler Inc. No. 12 WMC, 7 stage, vertical turbine type ash water pumps, each having a capacity of 1000 gpm sandy cold water against a total dynamic head of 340 feet and driven by a 100 hp, 3 phase, 60 cycle, 440 volt, 1800 rpm, vertical, hollow shaft, drip proof General Electric Motor.

Transformer Fire Protection N. Y. 77118

Grinnell Company Incorporated

One fire protection system of the fog spray type for two main power transformer banks (each consisting of 3 single phase transformers) and three 3 phase auxiliary transformers. This system is a completely automatic dry type with alarms and resets.

Intrasite Communication System N. Y. 77121

Automatic Electric Sales Corporation

One intrasite telephone system consisting of a PAX type automatic telephone switchboard and dial type outlying telephones, a code calling machine of the fully automatic type, selective thru dial at each telephone and code call single stroke bells. This system has an ultimate capacity of 50 telephone lines and seven conversation channels. However, at the present time, only 26 telephones

and 5 conversation channels are in service, with 23 call bells located at strategic points throughout the plant.
The system works on a 24 volt DC battery contained within the equipment. However, the call bells operate on 125 volts DC supplied by the station battery. Operation of these call bells are accomplished through relays connected to the 24 volt DC system.

Passenger Elevator N. Y. 77162

Otis Elevator Company

One passenger elevator platform size 6'4" by 7'3", 4000 lbs. capacity, 100' per minute travel, and controlled by car switch which must be held manually during operation. The elevator is raised and lowered by a 15 hp, 440 volt, 3 phase, 60 cycle, 900 rpm type 5 AC motor.

Fire Pumps N. Y. 77165

Worthington Pump and Machinery Corporation

One 6L-3 Worthington horizontal, single stage, double suction, volute centrifugal pump having a capacity of 2000 gpm water against a total dynamic head of 116' and driven by a 75 hp, 3 phase, 60 cycle, 440 volt, 1800 rpm, squirrel cage induction Allis-Chalmers motor.

Vacuum Cleaning System N. Y. 77200

Allen Billmyer Division of Lamson Corporation

One exhauster, Lamson Billmyer No. E-7, heavy duty cast iron, multistage centrifugal exhauster driven by a 20 hp, 3 phase, 60 cycle, 440 volt, 3600 rpm ballbearing totally enclosed Allis Chalmers motor.
One 38" primary separator having a dust capacity of 36.4 cubic feet and one 38" secondary separator having a dust storage capacity of 7.8 cubic feet.
Necessary pipe and fittings for making connections between pieces of equipment.
This vacuum cleaning equipment has a capacity to satisfactorily operate six 1½" or three 2" hose lines simultaneously. 34 self closing inlet valves are located at strategic points throughout the plant.

Turbine-Generator #3 N. Y. 77401

General Electric Company

One ASME-AIEE preferred standard hydrogen cooled condensing turbine generator unit consisting of the following;
One 40 000 Kw nominal rating, two cylinder, 3600 rpm, tandem compound, impulse type, condensing turbine for a steam condition at the throttle of 850 psig, 900°F and an average back pressure of 2.5" Hg. The turbine capability at maximum guaranteed steam flow of 397 000 lbs/hr to throttle is 44 000 KW with 3.5" Hg. absolute back pressure with 5 stage bleeding for feedwater heating and evaporation.
One 40 000 KW nominal rating, 0.8 short circuit ratio, 3600 rpm, 3 phase, 60 cycle, 13 800 volts, hydrogen cooled generator with capability of 46 000 KW @ 0.85 power factor and 15.0 psig hydrogen pressure.

One direct connected 145 KW, 250 volts main exciter with one direct connected 4 KW, 250 volts pilot exciter.
Necessary hydrogen control and seal oil equipment, oil coolers, recorders, regulator, and other accessories.

Boiler #3 N. Y. 77402

The Babcock and Wilcox Company

One steam generating unit capable of delivering 450 000 lbs/hr of 925 psig, 905°F steam continuously or 480 000 lbs/hr of 925 psig, 905°F steam for a four hour period when burning pulverized Colorado lignite, natural gas, or a combination of both. This steam generator is of the three drum vertical fired type with super heater and attemporator and including all necessary connecting ducts and flues. The services of an erecting superintendent are included with this order.
Also included are the following:
One set of pulverizing equipment consisting of four Babcock and Wilcox type E-56 mills and four table type feeders with coal piping from feeders to mills, coal air piping from mills to burners and Bailey air operated feeder controllers; air heater of tubular type with five air passes and provided with two Diamond Power Specialty Corporation straight line cleaning device units; tubular mechanical dust collector with hoppers; two forced draft fans of Sturdevant Division of the Westinghouse Electric Corporation manufacture, each driven by an Allis Chalmers 300 hp, 3 phase, 60 cycle, 2300 volt, 1160 rpm splash proof motor; two induced draft fans of Sturdevant Division of Westinghouse Electric Corporation manufacture, each driven by an Allis Chalmers 700 hp, 3 phase, 60 cycle, 2300 volt, 700 rpm motor.

Boiler Feed Pumps N. Y. 77403

Byron Jackson Company

Three 3" by 10", 9 stage, type HSB, double case Boiler Feed pumps capable of delivering 260 000 lbs/hr of condensate at a temperature of 285°F against a total dynamic head of 2725', each driven by an Allis Chalmers 600 hp, 3 phase, 60 cycle, 2300 volt, 3600 rpm splash proof motor furnished by others.
Three Republic Boiler Feed Pump by-pass recirculating valves, size 1½", 1500 psi complete with all necessary valves, solenoids, equalizing valves, pressure switches, position indicating switches, flow nozzles, and fittings for complete automatic operation of the by-pass recirculating valves.
All electrically controlled equipment is suitable for 125 volts dc operation.

Condenser #3 N. Y. 77404

Allis Chalmers Manufacturing Company

One 30 000 sq. ft., 2 pass, divided water box, horizontal surface condenser, with 7/8"OD No. 18 gauge phosphorized admiralty tubes 26' - 0" effective length and accessories as follows:
One twin element two stage size G22 S steam jet air ejector with two primary and two secondary jets to operate at 850 psig at 900°F Steam. This ejector is capable of evacuating 45 lbs. per hour of dry air with design back pressure of 1" Hg.

One 31000 GPM 48" by 36" type YDBVFM circulating water pump delivering against a total dynamic head of 75' with3' flooded suction, driven by an 800 hp, 3 phase, 60 cycle, 2300 volt, 580 rpm vertical type Allis Chalmers motor.
Two 350 000 lb/hr vertical, 10 x 4 type CF-2vt, 2 stage sump type condensate pumps to handle 115°F condensate against a total dynamic head of 350', each driven by a 100 hp, 440 volt, 3 phase, 60 cycle, 1750 rpm Allis Chalmers vertical type motor.

Transformers N. Y. 77405

General Electric Company

Three 16 667 kva, OISC, single phase, 60 cycle, main transformers provided for future addition of fans to increase rating to 22 500 kva. High voltage 66 675 wye with four full capacity taps, low voltage 13,200 delta.
One 6000 kva, OISC, 3 phase, 60 cycle, auxiliary transformer with provision for future installation of fans to increase rating to 7500 kva. High 13 800 with four full capacity taps, low voltage 2400, both sides connected delta.

Evaporator N. Y. 77414

The Griscom-Russell Company

One No. 126-A240 horizontal J-2, bent tube, submerged type, removable two bundle pattern evaporator having 650 sq. ft. of heating surface and designed for 13 500 lbs/hr net vapor output.
Evaporator includes a Worthington vertical tray type deaerating pre-heater and vent condenser capable of deaerating 20 000 lbs. per hour.

Ash Handling Equipment N. Y. 77415

United Conveyor Corporation

One ash pit hopper and accessories consisting of the following equipment:
One 3/8" steel plate ash hopper with molded D refractory cement linings and all necessary internal piping & lighting for this hopper; One 24" x 24" hydraulic cylinder operated vertical lifting door, 7 water jet nozzles, one 20" eccentric clinker crusher driven by a 3 hp, 3 phase, 60 cycle, 440 volt, electro fluid gear motor; also necessary 8" pipe, jet pulson pumps, sluice gates, hydroveyor exhauster, air separators, 5" fly ash conveyor pipe, pipe fittings, and control panel board for complete fly ash collecting & sluicing system for one boiler.

115 kv Oil Circuit Breakers N. Y. 77416

Westinghouse Electric Corporation

Three oil circuit breakers, 115 kv, 800 amp., 60 cycle, type Gm-4, "De-ion" grid, 3 pole, single throw, with type SAF-4 solenoid operated mechanism for 125 volt dc operation, mechanically and electrically trip free mechanism, floor mounted for outdoor service. The interrupting rating is 2 500 000 kva. Two of these breakers are provided with 9 multi-ratio type BYM bushing current transformers each and one oil circuit breaker is provided with only 6 of these bushing current transformers.
One oil circuit breaker used as Leetsdale No. 2 line breaker is provided with one type PBA bushing potential device of Westinghouse manufacture.

2400 Volt Switchgear N. Y. 77417

Westinghouse Electric Corporation

One 12 compartment 2400 volt metal-clad switchgear assemblage consisting of twelve type 50-DH-150 air circuit breakers, two rated at 2000 amp. and 10 rated at 600 amp., circuit breakers are solenoid operated on 125 volt dc, All units have necessary associated equipment such as 2 pole AB breakers, cell switches, current and potential transformers, and on hinged instrument panel, relays, instruments, control switches and indicating lights.
This switch gear assemblage is designated No. 3.

480 Volt Power Centers Unit #3 N. Y. 77418

Westinghouse Electric Corporation

One 480 volt indoor type power center designated 3-A consisting of the following:
One 6 compartment metal-clad switchgear which includes one future compartment,
In Compartment No. 1 is one 1000 kva, three phase, 60 cycle, 2400/480 volt, ASL dry type transformer connected delta delta.
One 480 volt indoor type power center designated 3-B consisting of the following:
One 5 compartment metal-clad switchgear including two spare compartments. In compartment No. 1 is one 1000 kva, 3 phase, 60 cycle, 2400/480 volts, ASL dry type transformer connected delta delta.
All of the compartments for motor operation contain a type DB-50 or DB-25, 3 pole, single throw, air circuit breaker and necessary ammeters, voltmeters, current and potential transformers, etc., for operation of each motor circuit.

Cooling Tower Power Center N. Y. 77419

Westinghouse Electric Corporation

One 480 volt cooling tower power center designated No. 3 consisting of the following:
One 5 compartment, 480 volt metal-clad control center for outdoor service.
In compartment No. 5 is mounted one 15 kva 480/120' volt, 1 phase, 60 cycle, dry type air cooled lighting transformer. Also in this same compartment is mounted a 12 circuit lighting panel board for control of lights on and around the cooling tower No. 3.
One 500 kva, OISC, 3 phase, 60 cycle, 2400/480 volt, delta connected transformer is provided with throat connection to the power center.

Lubricating Oil Filtering System N. Y. 77421

Bowser, Incorporated

One turbine oil conditioning system for General Electric Turbine No. 3 consisting of the following:
One No. 3 Bowser figure 832-P turbine oil conditioner with precipitation compartment, automatic water ejector, removable filter units, two figure 836-10 cellulose polishing filters, vent fan for moisture removal from all compartments and all necessary gauges, thermometers, etc. Filtering capacity of the

system is 540 gallons per hour.
One 8 GPM Bowser figure 841-A positive displacement roto-filter oil pump direct connected to a 1 hp, 3 phase, 60 cycle, 440 volt, 850 rpm drip proof Allis Chalmers motor.
One Bowser figure 825-2 vacuum vent slight overflow fitting for use with conditioner.
One 50 GPM Bowser 1½ figure 841-A positive displacement rotary transfer oil pump connected to a 3 hp, 1750 rpm, 3 phase, 60 cycle, 440 volt, drip proof Allis Chalmers motor.

Feed Water Heaters N. Y. 77422

Struthers Wells Corporation

Four extraction heaters for use with unit No. 3 as follows:
One fourth stage high pressure heater, U bend tube type, head on top, vertical heater having 1211 sq. ft. of heating surface and designed for 25.7 kB per hour heating load.
One seventh stage high pressure heater, U bend tube type, head on top, vertical type heater having 1140 sq. ft. of heating surface and designed for 23.5 kB per hour heating load.
One fifteenth stage intermediate pressure heater, U bend tube type, head on top, vertical type heater having 1014 sq. ft. of heating surface and designed for 21.6 kB per hour heating load.
One eighteenth stage low pressure heater mounted horizontally in the condenser exhaust connection. This heater has 1214 sq. ft. of heating surface and is designed for 17.16 kB per hour heating load.

Soot Blowing Air Compressor N. Y. 77423

Worthington Pump and Machinery Corporation

One 15/6 x 12 Worthington type DC-2 horizontal, duplex, two-stage, double acting compressor with by-pass control. Compressor is direct connected to a 150 hp, 3 phase, 60 cycle, 440 volts, 300 rpm Allis Chalmers synchronous motor with the following accessories:
One motor generator set having a 5 KW generator and driven by 7½ hp, 3 phase, 60 cycle, 440 volts, 1800 rpm Allis Chalmers motor.
A steel panel board on which are mounted relays, timing devices, pushbuttons, etc,, for complete automatic operation of this compressor.

Cooling Tower N. Y. 77425

One Marley cooling tower, wood filled, induced draft, double flow type, overall size 63' by 97' by 39', capacity 31,000 GPM. Tower to have four cells, each cell having one 20" water inlet, one 240" diameter fan with capacity of 635,000 cfm driven through a reduction gear by a 60/15 hp, 3 phase, 60 cycle,1760/870 rpm, 440 volts, reversible motor furnished by others.

Deaerator N. Y. 77426

Worthington Pump & Machinery Corporation

One 400,000 lb/hr horizontal deaerating heater equipped with stainless steel tubes and tube sheets and having an oxygen guarantee of .005 cc/liter at

400,000 lb/hr, and .03 cc/liter at 527,000 lb/hr. Storage capacity is 110,000 lbs. and designed for 80 psig working pressure. This deaerator is complete with necessary valves, thermometers, gauges, and float switches for high and low alarms.

480 Volt Control Centers N. Y. 77439

Westinghouse Electric Corporation

Five items of 480 volt metal-clad control centers as follows:
One fourteen compartment control center designated 3-A, one fourteen compartment control center designated 3-B, one four compartment control center designated for AC motor operated valves, one eight compartment control center for DC motor operated valves, one fifteen compartment control center designated for ventilation unit No. 3.
Each of the control center compartments contains a combination line starter type similar to Westinghouse class 11-216 or 11-206, and AB circuit breaker with thermal time limit overload and instantaneous short circuit protection.
Furnished in addition to the above were pushbutton station, indicating lamps, magnetic and manual starters, safety switches and magnetic time starters for remote mounting.

Boiler and Turbine Gauge Boards N. Y. 77451

Bailey Meter Company

One main boiler instrument and control panel QXA-X, 21'7" long by 8'6" high by 5' deep without top enclosure but with end enclosures with doors. Instruments for the operation & control of the boiler and its auxiliaries are mounted on these boards.
One boiler common control panel type QFA-X, 7' wide by 8'6" high by 5' deep installed adjacent to and west of the boiler gauge board and upon which are mounted those instruments common to both boilers 3 and future No. 4.
One turbine instrument and control panel type QFA-X, 19' long by 8'6" high by 5' deep, without top but with two end doors and upon ;which are mounted the controls and instruments of the turbo-generator unit #3 and its auxiliaries,
Instruments and controls for the conbustion control system and the feed water control system are also included in this order.

Main Control Switch Board N. Y. 77452

Westinghouse Electric Corporation

Two duplex panels for addition to the existing tunnel type main control switch board and designated Panel #12 for the control of generator No. 3 and Panel #13 for the control of generator No. 3 auxiliaries.
In addition to these two panels, other equipment was furnished as follows:
One neutral grounding transformer type cto-15, one potential transformer 13.8 KV/110 volts, two potential transformers 115 KV/110 volts, surge protective equipment consisting of 3 lightning arrestors and 3 capacitors for connection to the generator leads, 3 lightning arrestors outdoor type for connection to the 115 KV transmission line designated Leetsdale No. 2, one generator field circuit breaker cubicle in which is mounted the generator field air circuit breaker, shunts and field discharge resistor.
Further additional equipment furnished on this order included relays, recording

and indication instruments, control switches, etc., for mounting on various panels of the existing switch board.

Control Air Compressors N. Y. 77458

Gardner-Denver Company

One 9" x 9" Model RXC, single stage, horizontal, double acting, water cooled, forced feed lubricated air compressor with V Belt drive and having a capacity of 150 cfm at 90 psig. The drive is a 30 hp, 3 phase, 60 cycle, 440 volts, 1750 rpm Allis Chalmers motor furnished by others.
One Model B-93 Selan-Air after cooler, with moisture and oil separator.
One 36" diameter by 8' high, vertical, ASME air receiver tank designed for 125 psig working pressure.
All equipment is complete with safety valves, pressure gauges, drain valves, sight flow funnels and interconnecting oil piping.

Transformer Fire Protection N. Y. 77465

Grinnell Company Incorporated

One fire protection system of the fog spray type for three single phase main power transformers and one 3 phase auxiliary transformer. This system is a completely automatic dry type with alarms and resets.

Passenger Elevator N. Y. 77468

Otis Elevator Company

One passenger elevator platform size 6'4" by 7' 3", 4,000 lbs. capacity, 100' per minute travel, and controlled by car switch which must be held manually during operation. The elevator is raised and lowered by a 15 hp, 3 phase, 60 cycle, 440 volts, 900 rpm type 5 AC motor.

Water Softening Equipment N. Y. 77499

The Permutit Company

One Permutit 60 GPM sodium zeolite water softening unit complete with valves, piping, salt storage tank, brine measuring tank and necessary interconnecting piping.

Riverwell Pump No. 3 N. Y. 77518

Layne Western Company

One Layne & Bowler, Incorporated, 12" RKHC, vertical, single stage pump having a capacity of 1,000 GPM, 32° to 70°F river water against a total dynamic head of 55 feet. The pump is driven by a 20 hp, 3 phase, 60 cycle, 440 volts, 1800 rpm, vertical hollow shaft General Electric motor for outdoor service.

Plant Emergency Alarm Signal N. Y. 77534

Federal Enterprises Incorporated

This emergency system is similar to a city fire alarm system and consists of three positive, non-interfering, succession type alarm boxes located in the

two control rooms, two resonating electric horns mounted on the roof of the plant, two compressed air horns mounted within the building, and necessary control panel, relays, electrically operated valves, etc., for complete operation of this system.