

Cardinal Unit 3 Data



Rating	628,400 KW net output
In-Service	September 1977
Site Work	1,300,000 cubic yards sand fill
Substructure	60,000 cubic yards concrete resting on 3,714 12"-pipe piles from 50' to 70' long. Concrete is reinforced with 4,100 tons of reinforcing steel..
Superstructure	Structural Steel: Turbine – 1,710 tons Precipitator – 7,800 tons Boiler Room – 6,750 tons 7,500 cubic yards concrete in floors and equipment foundations
Chimney	895' 6" reinforced concrete column jump poured in 7½' lifts. Diameter at top is 33', bottom 74'. The column has 34" thick walls at the base tapering to 9" thick at the top. The column, weighing 13,600 tons, rests on a 16-sided, 12' thick foundation containing 6,645 cubic yards concrete and nearly 500 tons of reinforcing steel. The column contains 6,868 cubic yards concrete and will support a hanging stainless steel liner weighing 550 tons. Gases exit at 60 miles per hour.
Cooling Tower	The hyperbolic shaped tower is 423' high with an overall diameter of 384'. Diameter of the shell is 302' at base, tapering in to 160' and then back out to 180' at the top. Warm water from the condenser falls 46' from the hot water basin through the redwood fill to the cold water basin which holds 2,800,000 gallons at a 6' depth. The warm water enters the tower at 111°F. and leaves 21° cooler. Maximum evaporation loss is 1.8%. The tower weighs 31,000 tons and contains about 14,000 cubic yards concrete. Cooling capacity is 300,000 gallons per minute. Water is circulated with three 2,500 horse power motors.

Boiler	A supercritical design producing 4,555,000 lbs. of steam per hour at 1,010° F. and 3,850 lbs. per square inch gauge pressures at the superheater outlet, and reheating the steam to 1,000°F. at a rate of 4,005,000 lbs. per hour. Furnace width is 63', depth 51', height 174' and volume 489,000 cubic feet. Unit will burn about 400 tons of coal per hour. Total heating surface – 550,543 square feet (12.5 acres).
Generator	Hydrogen cooled with output rating of 670,000 KW and terminal voltage of 26,000 volts. Driven at a speed of 3,600 rpm, (revolutions per minute), stator weighs 382 tons; rotor weighs 72 tons.
Main Turbine	A tandem compound type, nozzle-regulated reheat condensing unit with a speed of 3,600 rpm.
Boiler Feed Pump	Driven by 31,500 hp steam turbine. Total weight is 30 tons. Capacity of pump: 4,900,000 lbs. per hour. Design speed is 4,850 rpm.
Main Transformer	Input voltage is 26,400 volts; output 345,000 volts. Rated at 725,000 kva.
Precipitator	7,800 tons steel. Capable of removing 50 tons/hour of ash. 99.8% efficient, 700°F. gas. Operates at 50,000 volts D.C. with collector plate area of 480,000 sq. ft. (11 acres).
Coal Pulverizers	Six, rated 66 tons per hour, and driven by 700 h.p. motors.
Fans	Forced Draft – two rated 5,000 h.p. each Induced Draft – four rated 3,500 h.p. each.
Miscellaneous	<ul style="list-style-type: none"> • 31,041 condenser tubes, each 35' long. • 120 swimming pools in cold water basin. • 3,000,000' of electrical cable (568 miles). • Barges hold 1,000 to 1,500 tons of coal. • Coal car holds 90 tons of coal. • Record employment: November 1976 – 2,550 workers • 9,200,000 man-hours spent on construction – equivalent to one man working 4,500 years.

