WATTS BAR FOSSIL PLANT
(Watts Bar Steam Plant)
Bounded by Morrison Lane & Tennessee River
Spring City
Rhea County
Tennessee

HABS TN-261
HABS TN-261

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY
SOUTHEAST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
100 Alabama St. NW
Atlanta, GA 30303

HISTORIC AMERICAN BUILDINGS SURVEY

WATTS BAR FOSSIL PLANT

HABS No. TN-261

Location: Watts Bar Fossil Plant is bounded by Morrison Lane and the Tennessee River, in Spring City, Rhea County, Tennessee. Watts Bar Fossil Plant is located at latitude: ~~0700993~~, 35.610807 -84.781462 longitude: ~~3942816~~. The coordinates represent the main entrance to the plant building. This coordinate was obtained on ~~October 21, 2011~~ 1 August 2014 by plotting its location on ~~the 1:24000 Decatur, TN USGS Topographical Quadrangle Map. The accuracy of the coordinate is +/- 12 meters.~~ Google Earth The coordinate's datum is ~~North American Datum 1927~~ WGS84. There is no restriction on the release to the public of the Watts Bar Fossil Plant location.

Present Owner/ Occupant: Tennessee Valley Authority (TVA)

Present Use: The Watts Bar Fossil Plant has been decommissioned and is currently not in use.

Significance: In 2011, the Tennessee Historical Commission (TN-SHPO) determined the Watts Bar Power Plant eligible for the National Register of Historic Places under Criterion C for its architectural significance as a local example of International Style architecture. In addition, the building is significant at the state level for its association with the TVA and the production of electricity during World War II.

Historians: Jeff Holland and Ted Karpynec of TRC Environmental Corporation (TRC), October 21, 2011.

Project Information: Jeff Holland and Ted Karpynec, historians, TRC; Vince Macek, photographer, TRC; TVA, project sponsor.

PART I. HISTORICAL INFORMATION

A. Physical History

1. Date of Construction:

August 8, 1940–April 8, 1945

Construction of the Watts Bar Steam Plant was authorized July 31, 1940 and was placed on a fast track schedule to provide power for military related manufacturing in the Tennessee Valley. Watts Bar Steam Plant was the first coal-fired plant designed and constructed by TVA. Construction began just one week after authorization, taking advantage of the crews, equipment and facilities in place for construction of Watts Bar Dam and Hydroelectric Plant, which had begun in 1939. A rail line was already in place along the south and east side of the plant site, and additional sidings were constructed to the site to convey materials. Originally, two units with a generating capacity of 60,000 kilowatts each were authorized, with a third added in April 1941, and a fourth in December 1941. The building footprint was extended to the west to add the additional units, with installation of equipment for Units A and B going on simultaneous with construction of the superstructure for Units C and D.[1]

Employees working on the steam plant were housed in the village constructed near the dam for the workers on that project, with some additional facilities constructed in Spring City. The construction village included recreational, medical, and educational facilities for workers and their families. Separate facilities were provided for African-American families. The children of TVA employees were transported to Rhea County schools.

Work was carried out in three 8-hour shifts and a 40-hour work week until July 1941, when it was stepped up to 48-hour week through completion. More than 2.85 million-person-hours were expended on the project through March 31, 1945. The project employed between 220 and 275 persons through April 1941, after which the work force increased rapidly to a peak of 788 employees in September of that year. The total remained over 500 until the first unit came on line in February 1942 (Unit B), then tapered down below 300 for the remainder of the project. Unit A was completed in March 1942, followed by Unit C in February 1943 and Unit D in April 1945.[2]

2. Architect:

TVA Design Division under the direction of Harry B. Tour, Architecture; A. A. Meyer, Civil Engineer; Sven Kvaven, Electrical Engineer; H. J. Peterson and K. C. Roberts,

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[1] Tennessee Valley Authority (TVA), *Performance of Watts Bar Steam Station of TVA*, by M. K. Bryan and R. T. Mathews, 1943, Office of Engineering Design and Construction, Engineering Project Histories and Reports, Watts Bar, Record Group 142, National Archives and Records Administration, Southeast Region, Morrow, Ga.; TVA, *The Watts Bar Steam Plant: A Comprehensive Report on the Planning, Design, Construction, and Initial Operation of Watts Bar Steam Plant*, Technical Report No. 8 (Washington, D.C.: Government Printing Office, 1949).
[2] TVA, *The Watts Bar Steam Plant*.

Mechanical Engineers; and K. C. Roberts and J. A. Howe, Structural Steel and Heavy Equipment Engineers.

3. Original and subsequent owners, occupants, and uses:

Tennessee Valley Authority has been the sole owner of the Watts Bar Fossil Plant since its construction. The land on which the plant was built was acquired from the Carrie Kyle estate. When purchased by TVA, the property contained dwellings, outbuildings, orchards, and other features, including three dwelling houses.[3] Most of the plant site was already cleared, with woods located along the northern margin. Buildings were typically removed from TVA sites after acquisition, but the main house on the Kyle estate was still standing as late as 1943.[4]

4. Builder, contractor, suppliers:

TVA Construction Department under the direction of F. C. Schlemmer (until May 1943) and L. W. Donnelly (after May 1943), Project Managers, and Franklin L. Bell (until May 1943) and R. E. Walsh (after May 1943), Construction Engineers.

Technical Report No. 8 provides a comprehensive list of all contractors and suppliers.[5] Major contractors/suppliers included Fort Pitt Bridge Works (structural steel), Babcock & Wilcox Company (steam generating units), General Electric Company (turbogenerators), Foster-Wheeler Corporation (condensers), Westinghouse Electric & Manufacturing Company (feedwater heaters, evaporator), Ingersoll-Rand Company (boiler feeder pumps, distilled water pumps, heater drain pumps, condensate drain pumps, gland-seal water pumps), American Blower Company (forced- and induced-air fans), Worthington Pump and Machinery Company (oil pumps, air compressors, deaerating heater and storage tank, fuel oil pumps), Warner Elevator Manufacturing Company (freight and passenger elevators), Moloney Electric Company (main power transformers), Allis-Chalmers Company (transformers), Link Belt Company (conveyors, car dumper), and Clyde Iron Works (barge pullers, barge unloading crane).

5. Original plans and construction:

Original plans and schematics for the entire project are available as TVA Technical Monograph No. 59.[6] The original appearance of the plant and its appurtenances is well documented in black and white photographs taken by TVA.[7] The main powerhouse structure consists of three sections: a steam generator room, a turbine room, and an office

[3] TVA, "Land Acquisition, Land Map, Watts Bar Reservation," ca. 1936, TVA Real Estate Division, Chattanooga, Tn.
[4] TVA, "Construction Photographs, Watts Bar," 1940–1945, Administrative Services, Chief Engineer's Records, Record Group 142, National Archives and Records Administration, Southeast Region, Morrow, Ga.
[5] TVA, *The Watts Bar Steam Plant*.
[6] TVA, *Drawings for the Watts Bar Steam Plant*, Technical Monograph No. 59 (Knoxville, Tn: Tennessee Valley Authority, 1948).
[7] Construction Photographs, 1942–1945.

and service wing. The four pairs of generating units and turbine units are laid out side-by-side from east to west, with the coal for the boilers located on the south side of the building and the transformer yard located on the north side. The office and service wings are located on the east side of the powerhouse. The public entrance is on the east side of the building facing the river, providing a pleasing vista.

The powerhouse façade is primarily gray brick with limestone coping. The turbine room has a continuous band of glass block near the top of the exterior walls, with sections of asbestos cement board above the band. A large, bay entrance containing a modern overhead metal door is located below the glass block band on the west end of the turbine room. There are also bands of glass block near the bottom of the boiler room walls. Large air intakes in the boiler room are shaded on the exterior with metal canopies. Two bands of continuous steel sash windows of different widths characterize the office wing. The increasing scale of the office wing, turbine room and generator room, along with the variation in fenestration on each of the three major elements of the building, were designed to provide relief from the large, unbroken walls of the plant.

The spacious public lobby has a high ceiling and glass walls facing the river and the interior turbine room. The north and south walls are marble. The south wall of the lobby contains a large photographic mural depicting the Watts Bar Project, along with a simple wall clock and block letters reading “Built for the People of the United States,” bracketed by the years construction began and ended. The public restrooms off the lobby feature red terrazzo tile.

The focus of the interior of the powerhouse was intended to be the massive turbines, which occupy an open enclosure finished with light blue terra cotta tile walls and gray ceramic tile floors. Architectural details were purposefully minimized in the space to highlight the turbines. A visitors’ balcony permits a full view of the room from its eastern end.

Other spaces within the powerhouse were generally designed with an emphasis on economy, efficiency, and functionality. Brick, steel, and concrete were used for most surfaces.

6. Alterations and additions:

Very few alterations were made to the powerhouse structure following completion of the fourth unit in 1945. As noted above, the paneled window on the west wall of the turbine room was replaced by a corrugated metal roll door at an unknown date. The steam plant was shut down between 1957 and 1972. Prior to being restarted, precipitators were installed on the roof in 1969 to conform with emissions requirements. The plant was shut down for a second time in 1982 and placed in reserve. In 1997, TVA determined there was no economic benefit to restarting the plant and allowed its air quality permits to expire. Subsequently, the facility’s cooling water intake structure and supply lines were transferred to the nearby Watts Bar Nuclear Power Plant as a supplementary cooling system. The hopper building and hoist building were removed, and the utility building was modified for use as offices. The precipitators were removed in 2000 and the conveyor system in 2007 or

soon thereafter.[8] The smokestacks were also removed sometime after the plant was decommissioned.

B. Historical Context

Watts Bar Steam Plant (later known as Watts Bar Fossil Plant) was designed and constructed by the Tennessee Valley Authority as part of an emergency plan to provide power to the defense industry, specifically for aluminum production for airplanes needed for the war in Europe. Created in 1933 as one of President Roosevelt's New Deal programs, TVA provided flood control, power generation, erosion control, and jobs in the Tennessee Valley through an ambitious program of dam construction along the Tennessee River that would eventually impound the entire river system. In the late 1930s, as the United States expanded its role in emerging world war, the agency's hydroelectric production became increasingly vital to military installations and industrial plants that were being located in the area. The scheduled completion dates of a number of TVA dams, including Watts Bar Dam, were pushed forward. However, by 1940, it had become evident that power demands would outstrip TVA's planned capacity within a few years. In response, the Federal Power Commission and the Advisory Commission to the Council of National Defense requested that TVA outline a plan to develop 220,000 kilowatts of additional capacity to meet anticipated needs. TVA's report called for a new hydroelectric facility on the Holston River (Cherokee Dam), additional capacity at Wilson and Pickwick dams, and the construction of a modern steam plant of 120,000 kilowatts capacity that would be Watts Bar Steam Plant.[9]

Prior to 1939, TVA had produced only negligible power from steam. The 60,000 kilowatt Wilson Steam Plant had been a TVA property since 1933, but it had been in standby condition until it was put into intermittent operation to supply the revived nitrate plant built at Muscle Shoals during World War II. TVA had also purchased the 54,000 kilowatt capacity of the Memphis Generating Company's Memphis Steam Plant and acquired the Tennessee Electric Power Companies properties, which included steam plants at Hales Bar, Parksville, and Nashville. Watts Bar would be the first steam generating facility designed and constructed by TVA from scratch.[10] A study of potential sites for the steam plant determined that a location below Watts Bar Dam could take advantage of the existing rail access, transmission lines, equipment, crews, and facilities already in place there. The project was authorized July 31, 1940, with an appropriation of $25 million. The estimated cost was $10 million.

The original plan for the Watts Bar Steam Plant called for two generating units, each with a 60,000 kilowatt capacity, and the first major purchases for the plant were made in November 1940. As anticipated power needs continued to climb, a third generating unit was authorized in April 1941, and a fourth unit in December 1941. The third unit required no

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[8] TVA, *Environmental Assessment: Watts Bar Fossil Plant Barge Unloading Crane and Conveyor Belt System Removal, Rhea County, Tennessee*, 2007, accessed October 11, 2011, http://www.tva.gov/environment/reports/wattsbar_fossil/ea.pdf.
[9] TVA, *The Watts Bar Steam Plant*.
[10] TVA, *The Watts Bar Steam Plant*.

additional federal funds, as TVA was able to cover the costs through expected savings and revenue increases. Due to wartime shortages, work on the fourth unit was suspended in November 1942, but was resumed a year later.[11]

The plant was built with the intention of serving as a reliable supplementary facility to the hydroelectric capabilities of the Watts Bar hydro plant during peak loads and low water, and its design reflects this role. Its importance to the war effort called for dependability and low cost. It was purposefully designed using proven models and was not considered innovative or technologically advanced. Plans called for an uncluttered layout and an ease of operation and maintenance. The plant operated as a base load generator in conjunction with the hydro plant, which used a spinning reserve system to generate immediate power when needed. The individual units could also be shutdown during periods of high stream flow and power generation returned to the hydro plant. The units were constructed to operate independently, with a minimum of interconnectedness, although the boilers and turbines were cross-connected in pairs to protect against failure to a major component. The installation of additional units was anticipated in the design, which called for a building with a unit framing structure and temporary west wall that could be removed for easy expansion. The construction of the substructure was substantially complete when authorization was received for Unit C, requiring the removal of the wall and excavation for the expanded footprint of the powerhouse. The temporary west wall of the superstructure had not yet been built, so the opening was simply covered with a tarp during construction of the additional units.[12]

Construction of Watts Bar Steam Plant began on August 8, 1940, just one week after funding was approved. A rail line was already in place along the south and east side of the plant site, and additional sidings were constructed to the site to convey materials. A construction plant was established with offices, shops, a concrete mixing plant, and storage areas to the south and west of the plant. Subsurface features were constructed first, including excavation for the substructure of the main plant and coal hopper building, and trenching for the cooling water intake line and outflow canal. Reinforced concrete foundations were required to support the boilers and other heavy machinery. The powerhouse was constructed on a framework of structural steel with a brick and glass-block façade. The steel frame and much of the exterior brickwork were completed by July 1941.

The powerhouse consisted of a boiler room and a turbine room, along with a public lobby, offices, a laboratory, and support areas. The ancillary facilities included an intake pipe from below the dam, a coal storage area, a coal hopper building, a barge unloading conveyor, a utility building, a switchyard, a discharge canal, and a slag disposal area. Most of these facilities have been removed or significantly altered since construction was completed.[13]

The steam-generating equipment for the plant was manufactured by Babcock & Wilcox Company and had a capacity of 600,000 pounds of coal per hour producing 900 psi at 900°F. Babock & Wilcox also produced the pulverizers used to crush the coal. The turbine

[11] TVA, *The Watts Bar Steam Plant*, 3–7, 18.
[12] TVA, *The Watts Bar Steam Plant*, 10, 28–29, 36, 46–47.
[13] TVA, *Drawings for the Watts Bar Steam Plant* and *The Watts Bar Steam Plant*.

generators were manufactured by General Electric. Westinghouse Electric made the heaters and evaporators. A number of pumps were made by Ingersoll-Rand Company. Other major suppliers of equipment included Worthington Pump & Machinery Corporation, Diamond Power Specialty Company, Bailey Meter Company, and Grinnell Company.[14]

Coal for the plant was brought to the site by railroad and river barge. Coal arriving by barge was unloaded by crane and placed on a conveyor system to carry it to the coal storage yard. From there, a dragline bucket system was used to distribute it. Coal arriving by rail could be unloaded directly into the hopper using a unique rotary car dumper that inverted the entire railroad car to empty it. The coal was transported to the crusher in the utility building, then up to the top of the powerhouse furnace room via a conveyor belt.[15]

Once inside the powerhouse, the coal was stored in bunkers that ran the length and height of the south wall. The bottom of the bunkers fed the coal into pulverizers, and the coal dust was pumped into the furnaces, adjacent to the bunkers. The furnaces fired boilers that heated water into "saturated steam." The saturated steam then passed through the coils of the superheaters to remove any suspended water droplets, increasing the efficiency of the generators. Similar coils in the economizers pre-heated the boiler water. The superheated steam was then piped through the wall of the boiler room and into the turbines in the turbine room. The turbines turned the adjacent generators, creating electricity. The electricity was distributed via the switch yard on the north side of the powerhouse.[16]

The turbines and generators were housed in integrated units on the turbine room floor. The steam exited the turbines into the condensers located under the generator units. The condensers were accessed by wells in the turbine room floor. The complex system of pumps, conveyors, heaters, condensers, fans, tanks, and pipes was regulated via a series of control boards located throughout the powerhouse.

Unit B was the first to go operational on February 15, 1942, with Unit A going on line one month later. Unit C began operation February 8, 1943. Unit D was completed and put into operation April 8, 1945. The final cost of the project was $19.75 million, with a cost per kilowatt hour of $82.50. This was slightly under the projected cost of $87.50 per kilowatt hour (TVA 1949).[17]

Between February 1942 and June 1943, units A and B each generated over 400 million kilowatt hours, at a load that varied between 50,000 and 64,000 kilowatts. The units were rated to operate at 70,000 kilowatts of continuous power during testing, but were limited to 65,000 kilowatts during operation.[18] In the one-year period from July 1943 to June 1944, the three operational units generated a combined 1.1 million kilowatt hours, increasing to 1.5 million the following year at the peak of the war production. Production fell sharply in the

[14] George E. Morgan, "Two 850-Psi 900-F Watts Bar Steam Units," *Power* 86, no. 7 (1942):82–85.
[15] TVA, *Drawings for the Watts Bar Steam Plant.*
[16] TVA, *Drawings for the Watts Bar Steam Plant.*
[17] TVA, *The Watts Bar Steam Plant.*
[18] Bryan and Mathews, *Performance of the Watts Bar Steam Station of TVA.*

first year after the war to just over 200,000 kilowatt hours, then jumped back up to nearly 1 million in 1946–1947.[19]

Although it had the greatest capacity of TVA steam plants after its completion, power needs in the Tennessee Valley continued to grow in the second half of the twentieth century. TVA completed seven coal-fired plants in the 1950s, and by 1957 was producing over 60 billion kilowatts hours of electricity, more than three times what it produced in 1950. About half of that total was consumed by the Oak Ridge Laboratories and other government installations. When Watts Bar was built, hydroelectric plants provided the bulk of TVA's output. By 1958, hydro power accounted for only a third of TVA's total output. Watts Bar Steam Plant's 240,000 kilowatt capacity was only a fraction of that of the new plants.[20]

Watts Bar Steam Plant was shut down in 1957, although the reasons are not clear. Given its diminished importance to the overall system, it is likely that it was no longer economical to operate compared to the larger, newer plants. A 1960 map showing the project area after the shutdown does not show any significant change from the site plan after the shutdown.[21] A series of roads and rail lines crossed the project area. The barge dock and coal conveyor are not indicated on the map, but were still in existence. The map shows that the property to the south of the steam plant had been designated for a nuclear power plant. In the late 1950s, TVA began planning for a nuclear program to meet anticipated increases in power demand. However, construction did not begin on the Watts Bar Nuclear Plant until 1972, and it was not operational until 1996.[22]

The Watts Bar Fossil Plant was restarted in 1970. A 1973 topographic quadrangle of the area shows that the steam plant site is not significantly changed from 1960.[23] Four buildings are shown at the plant site: the powerhouse, utility building, coal hopper, and hoist house. An area to the southeast of the plant is designated as an ash disposal area. The nuclear plant to the south is shown as under construction. The steam plant was shut down for a second time in 1982 and placed in reserve. In 1997, TVA determined there was no economic benefit to restarting the plant and allowed its air quality permits to expire. The plant was recently slated for removal by TVA.

The Watts Bar Fossil Plant played a major role in the production of electricity for industries supplying the U.S. military during World War II and was the first coal-fired steam plant planned, designed and constructed by the Tennessee Valley Authority. It represented the first step in the expansion of TVA's fossil fuel power program for both military and civilian uses, which transformed the region after the war.

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[19] TVA, *The Watts Bar Steam Plant*.
[20] TVA, *TVA Annual Report* (Knoxville, Tn.: TVA, 1958).
[21] TVA, "Watts Bar Reservation, Watts Bar Reservoir," Mapping Service Branch, Real Estate Division (Chattanooga, Tn.: TVA, 1960).
[22] TVA, "TVA Reservoirs and Power Plants: Fort Loudon and Watts Bar Reservoirs and Watts Bar Nuclear Plant," accessed October 20, 2011, http://www.tva.gov/sites/sites_ie.htm.
[23] TVA, "Decatur, Tennessee," 7.5-minute topographic quadrangle map (Washington, D.C.: U.S. Geological Survey, 1973).

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character:

The Watts Bar Fossil Plant is a box-shaped building that was designed by TVA's Design Division in the International Style. Members of the design team included architect Harry B. Tour, civil engineer A.A. Myer, and electrical engineer Sven Kvaven.[24] This early modern design is defined by its complete absence of exterior and interior ornamentation in order to emphasize flat smooth surfaces. The building exhibits these stylistic elements primarily through the treatment of the wall surfaces, which feature a light gray brick veneer interrupted only by air intakes shielded by metal canopies. Reinforcing the placid appearance of the façade, the fenestration is composed with continuous bands of single-light windows (ribbon windows) and windows composed of glass blocks. These attributes combine to create the character defining details of the International Style, which marked a clear separation from conventional industrial design precedents found in Neoclassical and Commercial Style approaches.[25]

Prior to World War II, the architectural design of industrial administrative buildings featured an emphasis on symmetrical façades marked with regular use of exterior ornamentation and embellishments. As a result, administrative buildings were designed to project a sense of power and permanence through the employment of columns and materials such as stone and brick. The International Style, however, succeeds in radiating an airy presentation that de-emphasizes mass and weight by accentuating horizontal planes.[26] This trait is clearly visible along the façade of the Watts Bar Fossil Plant's office wing, which employs continuous horizontal bands of windows. Moreover, the interior of the lobby with its 26' high ceiling (originally painted blue) combined with the window walls, terrazzo floor and marble walls presented a fresh and lively impression to visitors. TVA designers described the materials in the lobby as having an effect that is "light and colorful, appealing and interesting. The large combination lighting and ventilating fixtures in the ceiling, flanked by outer rows of recessed lights, give the upper part of the room an attractive sparkle."[27] This ambiance is carried into the adjoining turbine room with its high ceiling, massive glass block windows, and use of light-blue terra cotta tile.

2. Condition of fabric:

Overall, the Watts Bar Fossil Plant is in poor condition. Since its closure in 1997, the physical integrity of the building has deteriorated as a result of neglect and lack of proper maintenance. This has led to significant failure of the roofing system, which has resulted in extensive water damage to interior spaces. Damage to interior spaces stemming from water

[24] TVA, *The Watts Bar Steam Plant,* 299.
[25] Marcus Whiffen, *American Architecture since 1780: A Guide to the Styles* (Cambridge, Ma., The MIT Press, 1996).
[26] Whiffen, *American Architecture.*
[27] TVA, *The Watts Bar Steam Plant,* 49.

intrusion includes the partial collapse of plaster ceilings, mold growth, and corrosion of the metal window sashes. In addition, the interior of the building suffers from nesting by birds and other animals, which have penetrated the building through open windows and vents. Recently, the interior of the building has been designated as a chemical hazard site due to the presence of asbestos, lead, and PCBs.

B. Description of Exterior:

1. Overall dimensions:

The Watts Bar Fossil Plant is a box-shaped building divided into three separate sections consisting of the office and service bay, the turbine room, and the boiler room. The office and service bay is a two-story, rectangular-shaped structure that measures 163' x 40'. The turbine room is a single room that measures 234' x 81' x 51'. The boiler room measures 244' x 99' x 96'.

2. Foundations:

The foundation of the Watts Bar Fossil Plant is composed of reinforced concrete that measures 36" in thickness.

3. Walls:

The exterior walls of Watts Bar Fossil Plant are clad with a buff gray brick veneer laid in stretcher bond and topped with a limestone coping. Public access to the building is achieved via the east façade, which faces the Tennessee River. This elevation features a projecting, two-story, bay marked by a large ground-to-roof glass entrance. This entrance includes a set of three metal doors containing a large single light of glass. The door arrangement is flanked on either side by a large single-light sidelight. Situated above the doors are thirty-five single-light fixed sash windows set within a metal frame. A bracketed metal flag pole is located south of the public entrance and is followed by the plant name in block lettering that reads:

WATTS BAR STEAM
FIRST FOSSIL STEAM ELECTRIC
GENERATING PLANT
DESIGNED, ENGINEERED, AND
CONSTRUCTED BY T.V.A.

Additional fenestration found on the projecting bay includes a band of eight metal awning sashes on the first and second floor situated on the south façade. The bay is topped by a metal railing that extends along the roof of the adjoining office wing.

Connected behind the entrance bay is the boiler room section of the power plant. This part of the building is characterized by long metal canopies that shield the air intakes from the weather. In addition to serving a functional purpose, TVA designers viewed the canopies as an aesthetic enhancement to the powerhouse by providing a "…much needed relief to the

huge unbroken wall surfaces" dominated by brick veneer.[28] Three segments of metal canopies are found in the upper level of the boiler room on the east façade.

Located north of the entrance bay is the two-story office and service wing. This section of the fossil plant is marked by an unbroken horizontal band of one-over-one, metal awning sash windows that extend to the north elevation of the bay. Fenestration along the second story also includes an unbroken band of windows; however, each window contains a large fixed center light that is topped by a fixed transom and rests on a metal hopper sash. As with the first story windows, the second story fenestration continues along the north elevation of the office and service bay.

South Façade: This elevation features a long horizontal band of alternating metal sash awning windows and fixed, glass block windows on the first story. This fenestration is flanked on either side by a door opening containing a set of three metal doors. Each door is topped by a three-light metal transom containing fixed sashes. The elevation also includes a metal canopy that runs just above, and equal to the length, of the window arrangement.

West Façade: This elevation contains a horizontal band of seven glass block windows on the first story and a single metal door. As with the south façade, an air vent canopy is situated just above the west façade fenestration. Additionally, three symmetrically placed canopies are found in the upper half of the elevation, which also includes an enclosed opening that once connected the bunker conveyor between the fossil plant and the utility building.

North Façade: The boiler room section is marked by three systematically placed air intake canopies along its upper part. The boiler room roof is ringed by a metal railing and once contained two, 16-foot-diameter steel smoke stacks that rose 50' high. The stacks served the two boilers found in this section of the fossil plant and were removed sometime after the plant closed in 1997.

The north façade features the turbine room, which houses the four turbo generators. The exterior of the exposed west and north façades are dressed with a combination of brick veneer in the lower portion and glass block windows in the upper area. The horizontal span between the glass blocks and the roof line is sheathed with corrugated asbestos cement board. Exterior access to the turbine room is achieved through four service bays that contain overhead metal doors. An additional service bay is located on the west façade of the turbine room. This bay contains an overhead metal door that originally provided rail access into the turbine room for delivering equipment.

4. Structural system, framing:

The building is composed of structural steel that is capped by a precast slab roof. Interior rooms are divided by brick and/or tile walls that are supported by floors composed of concrete or steel floor grating.

[28] TVA, *The Watts Bar Steam Plant*, 49.

5. Porches, stoops, balconies, porticos, bulkheads:

Not applicable

6. Chimneys:

Not applicable

7. Openings:

a. Doorways and doors:

The façade elevation features a projecting, two-story, bay marked by a large ground-to-roof glass entrance. This entrance includes a set of three metal doors containing a large single light of glass. The south façade is pierced by two door openings that contain a set of three metal doors. Each door is topped by a three-light metal transom containing fixed sashes. The north façade includes four service bays that contain overhead metal doors. Located east on the office wing is a set of three metal doors that provide access to the shop area. The doors are centrally placed, with each door containing two lights in the upper portion. The west façade contains a service bay that provides access to the turbine room. This bay contains an overhead metal door topped by an eight-light metal transom that originally provided rail access into the turbine room. The west façade of the turbine room also includes a swinging metal door that is not original to the building. Based on original architectural drawings this bay entrance was marked by a pair of swinging metal doors that featured fourteen lights on each door. Situated to the south is a swinging metal door that provides alternative access into the turbine room.

b. Windows and shutters:

Fenestration on the façade elevation includes thirty-five single-light fixed sash windows set within a metal frame above the main entrance doors. The adjoining office and service bay is marked by an unbroken horizontal band of one-over-one, metal awning sash windows that extend to the north elevation of the bay. Fenestration along the second story also includes an unbroken band of windows, however, each window contains a large fixed center light that is topped by a fixed transom and rests on a metal hopper sash. As with the first story windows, the second story fenestration continues along the north elevation of the office and service bay. Additional fenestration found on the building includes fifty-two glass block panels found on the upper portion of the turbine room. Each panel generally contains 288 individual glass blocks. The west elevation contains a horizontal band of seven panels comprised of glass blocks on the first story. Each panel contains seventy-two individual glass blocks. Situated along the south elevation is a horizontal band of alternating metal sash awning windows and glass block panels on the first story. The number of awning windows is seventeen, with the number of glass block panels totaling sixteen. Each glass block panel contains seventy-two individual glass blocks.

8. Roof:

a. Shape, covering:

The roof of the powerhouse is flat and composed of a precast concrete slab covered with a rubber membrane.

b. Cornice, eaves:

The roof line is sheathed with corrugated asbestos cement board.

c. Dormers, cupolas, towers:

Not applicable.

C. Description of Exterior:

1. Floor plans:

The interior of the Watts Bar Fossil Plant is divided into three separate sections consisting of the office and service bay, the turbine room, and the boiler room. The office and service bay is a two-story, rectangular-shaped structure that measures 163' x 40'. The turbine room is a single room that measures 234' x 81'. The boiler room measures 244' x 99'.

The entrance lobby measures 20' wide, 30' long, and 26' high. Both the east and west end walls of the lobby are composed entirely of glass lights set in metal framing. The floor of the lobby consists of a reddish-brown terrazzo floor and golden-buff marble panels on the north and south walls. A dedication inscription along the south wall reads:

1940 BUILT FOR THE PEOPLE OF THE UNITED STATES 1943

The inscription is topped by a wall clock featuring stylized Art Deco numbers. The south wall is further highlighted by a photographic mural depicting various TVA hydroelectric dams. Due to the lack of regular maintenance since the closure of Watts Bar Fossil (WBF), the integrity of the powerhouse roof has deteriorated to the point that the lobby and office areas have suffered significant water damage. This has led to the partial collapse of interior plaster ceilings and damage to the photographic mural.

Located on either side of the mural is a marble drinking fountain and doors that provide access to public restrooms and the turbine room. Situated on the north wall is an open stairway that leads to the second floor offices and a lounge balcony overlooking the lobby. The staircase and balcony feature steel railings with plate-glass panels, with walls dressed in an orange tile. Additional features found in the lobby include original aluminum light fixtures. A door on the north wall provides access to the women’s restroom.

The second story of the office wing features corridors that provide access to a series of rooms that include: the laboratory, employee locker rooms and bathrooms, the offices for the superintendent and assistant superintendent, and a large room for clerks. The hallway is

adorned with tile floors and plaster walls. In addition, a glass wall, similar to the one found in the lobby, adorns the north wall of the corridor. Stenciled eagles are found on the lower two rows of the glass lights. Each room within the second floor features plaster walls and ceilings covered with acoustical tiles. The second floor also includes access to an overlook balcony, which offered visitors an elevated view of the turbines. As with the main lobby, the overlook balcony features a wall clock with stylized Art Deco numbers. The walls of the balcony are faced with light-blue terra cotta tiles. From the second story an enclosed stairwell provides access to the first floor of the office wing. This area is devoted to the machine shop and tool storage area.

A door on the north wall of the machine shop leads directly into the turbine room, which measures 81' wide, 234' long, and 51' high. The turbine room retains much of the original machinery, including the four turbines, the 75-ton overhead crane, condensers, and control panels. The turbine room features a floor covered with gray ceramic tile and walls dressed with light-blue terra cotta tiles. Fenestration consists of fixed windows composed of glass blocks located in the upper reaches of the room. The roof is comprised of precast concrete slabs that are supported by a series of rigid steel frames.

Access to the multi-story boiler room is achieved through passages found in both the lobby and turbine room. This section of the powerhouse houses an array of equipment associated with the boilers and pulverizers. The upper floors of the boiler room feature steel grate floors that are accessible by steel stairs with pipe railings.

2. Stairways:

See subsection 1.

3. Flooring:

See subsection 1.

4. Wall and ceiling finish:

See subsection 1.

5. Openings

a. Doorways and doors:

Interior doors to the lobby restrooms, offices, and storage rooms are metal. Each door contains a centrally placed metal louver vent set within the central panel. The louver vent runs vertically between the bottom and top rails. Doors to the lobby restrooms contain metal lettering with the words “MEN” and “WOMEN”. All the doors are painted white and feature a metal kick plate.

b. Windows:

The interior of the powerhouse features no notable interior window trim.

6. Decorative features and trim:

Interior decorative features include the wall clock situated in the overlook balcony in the turbine room. The clock is comprised of wood numbers and hands that are covered with a silver color laminate. The lobby includes the dedication inscription that is composed of wood letters painted silver. The inscription reads: 1940 BUILT FOR THE PEOPLE OF THE UNITED STATES 1943.

7. Hardware:

All doors located within the office and service bay feature metal hinges, knobs, and strike plates. Window sashes within the office and service bay contain metal hinges and locks.

8. Mechanical equipment

a. Heating, air conditioning, ventilation:

Unknown

b. Lighting:

The lobby includes fifteen circular-shaped aluminum light fixtures that are flushed with the ceiling. Additional light fixtures include square-shaped flush ceiling lights in the second story corridor of the office bay. Second story office rooms feature modern rectangular-shape fluorescent light fixtures. The turbine room contains a series of standard pendant style industrial light fixtures composed of aluminum.

c. Plumbing:

Interior plumbing for toilets, sinks, and water fountains consists of steel pipes that were manufactured by the American Radiator & Standard Sanitary Corporation.

9. Original furnishings:

Non-extant

D. Site:

1. Historic landscape design:

The Watts Bar Fossil powerhouse is located southeast of Spring City along the west bank of the Tennessee River near River Mile 530 in Rhea County, Tennessee. Elevation within the project area is approximately 725' above mean sea level (AMSL). All elements of the natural,

pre-TVA plant landscape within the APE have been thoroughly altered by previous grading, construction, demolition, and dumping activities that have occurred for more than fifty years since the powerhouse has been in existence. The immediate setting is drained by two unnamed creeks that run along the east side of the plant. These drainages empty directly into the Tennessee River, which flows south-southwest from the facility. The proximity to Watts Bar Dam and the Tennessee River played a significant role in TVA's decision to build the powerhouse at its current location. A paved roadway that includes curb cuts and drainage surrounds the powerhouse. Portions of the grounds immediately adjacent to the east façade appear to have been a maintained lawn, but it is currently overgrown.

2. Outbuildings:

A barge unloading crane is located east of the powerhouse along the Tennessee River. The crane features a clamshell bucket that was utilized to remove coal from barges and deposited into an adjacent receiving hopper (demolished). The electrically powered crane was manufactured by Clyde Iron Works of Duluth, Minnesota and features a 75-foot straight boom.[29]

[29] TVA, *The Watts Bar Steam Plant*, 140, 292.

Part III. Sources of Information

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TN-261
FLOOR PLANT
WATTS BAR FOSSIL PLANT
(NOT TO SCALE)