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August 9, 1995

Mark O. Medford, LP 3B-C

RECORD OF DECISION - OPERATION OF WATTS BAR NUCLEAR UNIT 1

On July 10, 1995, TVA announced that it had adopted the Final Supplemental Environmental Impact Statement (FSEIS) issued by the Nuclear Regulatory Commission (NRC) on operation of Watts Bar Nuclear Plant (WBN). Notice of the availability of this adopted FSEIS was published at 60 Fed. Reg. 35,393 (1995).

As stated in the adoption announcement and the final report, "Operation of Watts Bar Nuclear Plant" (June 1995), TVA has determined that generation from WBN Unit 1 is needed to meet expected energy demands in 1996. TVA considered alternatives to operating WBN Unit 1 and determined that no other alternative is as cost effective or would be more environmentally preferable. Under all of TVA's load forecasts, WBN Unit 1 is needed.

TVA has received some criticism regarding TVA's load forecasting methods and results, and questioning whether WBN Unit 1 will be needed to meet demands for electric energy in the TVA region. NRC also received comments questioning the need for WBN Unit 1 during the FSEIS process. TVA has carefully considered these comments. TVA's load forecasting methods and results are explained in the June 1995 report and were summarized in the adoption announcement. Load forecasting is inherently uncertain and actual demand may differ from that TVA's forecasts predict. However, TVA's forecasts employ state-of-the-art techniques and have produced better results than the industry standard for the last 10 years.

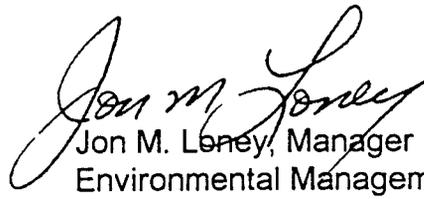
TVA decided in the early 1970's to construct and operate WBN. The attached Record of Decision (ROD) explains the factors supporting the decision to continue with WBN Unit 1, including the need for power from WBN Unit 1, its cost effectiveness, and the relatively minimal environmental effects of operating the unit. If you agree, please sign each of the three originals of the ROD and

Mark O. Medford
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return the signed originals to Mr. Loney. He will arrange to have the ROD published in the Federal Register. Publication of the ROD completes the FSEIS process.

If you have any questions, please call one of us.


for Bruce S. Schofield
WBN Site Licensing Manager
FSB 2K-WBN


Jon M. Loney, Manager
Environmental Management
WT 8C-K

BBW:LBO
Attachments
cc (Attachment):
Edward S. Christenbury, ET 10A-K

Billing Code 8120-01-M

TENNESSEE VALLEY AUTHORITY

Operation of Watts Bar Nuclear Plant Unit 1

AGENCY: Tennessee Valley Authority

ACTION: Issuance of Record of Decision

SUMMARY: This notice is provided in accordance with TVA's procedures implementing the National Environmental Policy Act. TVA has determined that to meet the increasing need for electric power in the TVA region, it should continue with its plans to operate its Watts Bar Nuclear Plant (WBN) Unit 1 in 1996. On July 10, 1995, TVA announced that it had decided to adopt a Final Supplemental Environmental Impact Statement (FSEIS) on operation of WBN. 60 FR 35,577. This FSEIS was issued by the Nuclear Regulatory Commission in April 1995. Notice of the availability of the adopted FSEIS was announced by the Environmental Protection Agency at 60 FR 35,393.

FOR FURTHER INFORMATION CONTACT: Jon M. Loney, Manager,
Environmental Management Staff, Tennessee Valley Authority, 400 West Summit
Hill Drive, WT 8C-K, Knoxville, Tennessee 37902, (615) 632-2201.

SUPPLEMENTARY INFORMATION: TVA is the electric supplier to an 80,000-square mile area containing parts of seven States. It and the distributors of energy, which TVA generates, serve about 7.5 million people. TVA currently has

25,600 megawatts of generating capacity on its power system. This includes coal-fired units, nuclear units, hydroelectric units, combustion turbines, and pumped storage hydro units.

TVA's WBN is located in Rhea County, Tennessee, approximately 80 kilometers (50 miles) northeast of Chattanooga, Tennessee. The site is located adjacent to TVA's Watts Bar Dam Reservation at Tennessee River Mile 528. WBN is a two unit pressurized water reactor nuclear plant. Each of its units has a net electrical output 1,160 megawatts. In August 1970, TVA proposed to construct and operate WBN. After completing an environmental impact statement, TVA decided to proceed with the plant in 1973.

Completing and licensing of the plant has been delayed. The delay was due in part to installation of modifications that NRC ordered for nuclear plants following the 1979 incident at the Three Mile Island nuclear plant. In addition, the need for power in the TVA region and elsewhere in the country dramatically changed from the need forecasted in the early 1970s. Plant licensing was further delayed in the mid-1980s while TVA resolved a number of WBN-specific safety concerns. To respond to these concerns, TVA implemented a series of corrective actions and plant modifications to prepare WBN Unit 1 for operation. Fuel is now scheduled to be loaded in WBN Unit 1 in late 1995 with commercial operation expected in Spring 1996. TVA has determined that Unit 1's generation is needed in 1996 and has decided not to change its earlier decision to proceed with the unit.

Under TVA's Load Forecasts, WBN Unit 1 Is Needed

The determination that WBN Unit 1 is needed in 1996 is based on TVA's forecasts of future power needs in the region that it serves. These forecasts rely on national and regional economic data and are produced through the use of state-of-the-art computer models. TVA prepares three types of forecasts of future power demands—a low-, medium-, and high-load forecast. There is substantial uncertainty in forecasting future power needs. Using a range of forecasts helps address this uncertainty.

The high-load forecast is designed to project a level of future energy demand that has a 90-percent probability of not being exceeded (there is only a 10-percent chance that the forecast would be too low and that the demand would be greater). The medium-load forecast has a 50-percent probability. The probability for the low-load forecast is 10 percent--there is a 90-percent chance that the demand for energy in the TVA region would be greater than this estimated level.

Under all of TVA's current load forecasts, there is a need for additional energy resources in the immediate future to meet the demand for energy in the TVA region. Under TVA's medium-load forecast, there is a need in 1996 for the capacity of WBN Unit 1, as well as an additional 850 megawatts. Under TVA's high-load forecast, there is a need for 1,500 megawatts plus WBN Unit's capacity. Only under the low-load forecast is there a slight surplus of capacity in 1996 of 300 megawatts with WBN Unit 1 operating.

TVA has received comments that its load forecasts are too high and the need for WBN Unit 1 has been questioned. TVA acknowledges that load forecasting is inherently uncertain and that future demand in the TVA region may

be less than TVA's forecasts. However, since 1985, TVA's forecasting methodology has produced forecasts that have been within plus or minus 5 percent of actual demand. This is better than the utility industry standard of plus or minus 8-percent accuracy.

Because of concern about the accuracy of its forecasts, TVA asked Barakat & Chamberlin, Inc., a nationally-recognized expert in energy resource planning, to review TVA's forecasting approach in 1991. Barakat & Chamberlin concluded: "on a comparative basis, TVA's forecasting procedures compare very favorably with the best-practice procedures in the United States utility industry."

More recently, in connection with the preparation of its integrated resource plan and programmatic environmental impact statement, Energy Vision 2020, TVA asked George McCollister with Spectrum Economics, Inc., to review TVA's 1994 load forecast. Dr. McCollister is a load forecasting expert and was retained to provide independent advice to members of an outside stakeholders review group who oversaw preparation of Energy Vision 2020. Dr. McCollister suggested some improvements to TVA's load forecasting methodology but concluded: "TVA uses state-of-the-art models to forecast electric sales to residential and commercial customers in its power service area. TVA has acquired vast amounts of data and conducted many studies to support these models. TVA produces excellent documentation for its economic forecast, and perhaps does the best job of any utility in the country in forecasting the range of uncertainty in both its economic and electric load forecasts. TVA is highly commended for its achievements."

It takes many years to plan, permit, and construct new energy sources or to plan and deploy energy conservation measures (demand-side management

programs). Years before the demand for energy arises, electric utilities must make decisions about how to meet forecasted demands. If no decisions are made or if the utility's forecasts are too low, those needing electric service in the future may not get it. TVA decided years ago that WBN would be needed to meet future demands on its system. Its current forecasts show that WBN Unit 1 is needed next year, and TVA chooses to rely on these forecasts and its experts. Even under the forecasts produced by those questioning TVA's forecasts, there is still a need for additional energy resources to meet energy demands in the TVA region. WBN Unit 1 would meet those needs while offsetting generation from the existing coal-fired system, thus reducing environmental effects.

Alternatives Considered

TVA considered a number of alternatives to constructing and completing WBN in its 1972 final environmental impact statement (FEIS). Among those alternatives were construction of coal-fired units, hydroelectric units, gas-fired units, and oil-fired units. These alternatives were deemed not feasible, more costly, and/or more environmentally detrimental than construction and operation of WBN. TVA also considered purchasing firm power from neighboring utilities but concluded that its neighbors would not be able to supply sufficient firm power to meet TVA's needs and that the environmental impacts of a neighboring utility generating that power would likely be similar to or greater than the impacts associated with operating WBN.

WBN Unit 1 is now essentially complete and the alternatives available to TVA in light of the status of the unit and need for it are limited. TVA considered continuing with the unit (the No-Action Alternative because it involves not changing

TVA's current course of action), delaying completing the unit and purchasing power, or canceling the unit and purchasing power. TVA concluded that continuing with WBN Unit 1 was the most cost effective and environmentally preferable alternative among the viable alternatives remaining to it.

TVA has invested approximately \$6.4 billion in Unit 1 and the facilities it shares with Unit 2. Since these costs have already been incurred, changing TVA's course of action and deciding not to operate the plant would not avoid the costs. TVA would still have to recover these costs in the rates it charges for its electricity. If TVA does not complete the unit, it would have to write off approximately \$200 million to \$600 million in costs annually, depending on the period for the write-off. Operating the unit would allow TVA to begin earning a return on the agency's investment in the form of generation from the unit and allow TVA to recover the costs of building the facility over a longer period of time (40 years versus the traditional write-off period of 10 years).

Compared to purchasing power or meeting future demand with coal-fired generation or combustion turbine units, operation of WBN Unit 1 will be more economical. WBN Unit 1's operating costs are projected to be approximately 1.7 cents/kwh. The operating costs of alternative generating sources range from 2.0 to 6.0 cents/kwh.

It is difficult to project the potential environmental impacts associated with purchasing power because there are a number of different kinds of sources that could provide this power. If it comes from a neighboring utility system, TVA's analyses indicate that the power is likely to be produced by coal-fired units because these are the units that are economically marginal to operate (the utility will be

operating other, lower-cost generation to meet its own needs). As explained in TVA's 1972 FEIS, coal-fired units result in substantially larger amounts of air pollution than would operation of WBN Unit 1. Gas-fired units would also produce more air emissions pollution. As a closed-cycle plant, WBN Unit 1 is also likely to produce fewer water emissions than a coal-fired unit or another nuclear unit which is open cycle.

The environmental consequences of completing and operating WBN Unit 1 are set out in TVA's 1972 FEIS and its adopted 1995 FSEIS. Most of the impacts associated with Unit 1 result from constructing the unit and have already been experienced. The impacts associated with actually operating the unit are relatively minimal. They include: (1) releases of small quantities of radioactivity to the air and water; (2) release of minor quantities of heat and nonradioactive waste waters to Chickamauga Reservoir; and (3) release of significant quantities of heat and water vapor from the plant's cooling towers to the atmosphere. Conversion of the site from agricultural use to an industrial use has largely occurred with the construction of the plant.

TVA also considered as a possible, but nonviable, alternative the deployment of energy conservation programs to reduce the demand that WBN Unit 1 would serve. There are a large number of these programs that could be deployed in the TVA region. However, it takes three to five years to put such programs in place and to begin to achieve noticeable energy savings. The combination of sufficient programs to offset Unit 1's capacity is estimated to cost approximately 7.0 cents/kwh, well above Unit 1's operating costs. It is, therefore, not feasible to deploy sufficient energy conservation programs in time to meet the

need in 1996; and, even if such programs could be deployed in time, they would cost much more than operating WBN Unit 1.

Mitigation and Monitoring Measures

The 1972 FEIS and the 1995 FSEIS identify a number of mitigation and monitoring requirements. These have either been incorporated in the plant's construction permit or National Pollutant Discharge Elimination System (NPDES) permit and, as appropriate, are expected to appear as conditions in the operating license issued by NRC for the unit.

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Mark O. Medford
Vice President, Engineering and Technical Services

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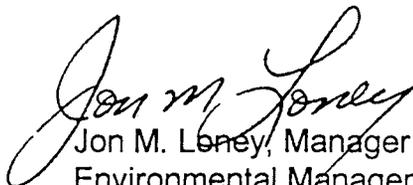
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