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EFS-95-004

**GDP TURNOVER CONTINGENCY PLANNING
POWER CONTRACTING OPTIONS**

JULY 1995

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This document is approved for public release per
review by:

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UCOR ETP Classification &
Information Control Office

Date

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FOR THE UNITED STATES
DEPARTMENT OF ENERGY**

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POWER CONTRACTING OPTIONS**

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**Prepared for the
U.S. Department of Energy
by
Martin Marietta Energy Systems, Inc.,
under contract DE-AC05-84OR21400**

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ACRONYMS

D&D	Decontamination and Decommissioning
DOE	Department of Energy
EEI	Electric Energy, Inc.
MOA	Memorandum of Agreement
Mw	megawatt
Mw-h(s)	megawatt hour(s)
OVEC	Ohio Valley Electric Corporation
PGDP	Paducah Gaseous Diffusion Plant
PORTS	Portsmouth Gaseous Diffusion Plant
TVA	Tennessee Valley Authority
USEC	United States Enrichment Corporation

1. INTRODUCTION

The Department of Energy (DOE) currently holds power contracts with Electric Energy, Inc., (EEI) for the supply of power to the Paducah Gaseous Diffusion Plant (PGDP) and with Ohio Valley Electric Corporation (OVEC) for the supply of power to the Portsmouth Gaseous Diffusion Plant (PORTS). Power is procured under these contracts for the United States Enrichment Corporation (USEC), which leases uranium enrichment facilities at PGDP and PORTS from DOE. USEC reimburses DOE for the cost of the power. However, because DOE holds the contracts, DOE is contractually liable under the provisions of the contract. The relationship between DOE and USEC concerning power, including USEC's obligations to reimburse DOE for power-related expenses, is described in the DOE/USEC Lease Agreement,¹ specifically Exhibit E, "Memorandum of Agreement between United States Department of Energy and United States Enrichment Corporation for Electric Power."²

The report "Power Contract Termination Provisions and Consequences"³ enumerates the termination provisions of each power contract including the rights, obligations, and options available. Because of past purchases of power, DOE has obligations for a number of expenses (such as power plant Decontamination and Decommissioning [D&D]) that will come due when one of the power contracts is terminated. The report also describes the power contract termination obligations between USEC and DOE outlined in the Memorandum of Agreement (MOA).² Many of the termination provisions allow DOE to request that the power suppliers attempt to minimize termination costs by disposing of assets on the open market. It is not possible to predict with certainty the extent to which these efforts will be successful. The value of many assets will change with time as well. In these cases, the report offers informed opinion ~~is offered~~ as to the possible success these efforts will meet. The report also provides estimates for expected costs of termination provisions.

This report extends the work of the earlier report and examines the strategy DOE should pursue and the actions that should be taken to minimize power contract-related costs to DOE in the event that USEC returns a GDP to DOE.

¹*Lease Agreement Between the United States Department of Energy and the United States Enrichment Corporation, July 1, 1993.*

²*Memorandum of Agreement between United States Department of Energy and United States Enrichment Corporation for Electric Power, dated as of July 1, 1993.*

³*EFS-95-003, GDP Turnover Contingency Planning Power Contract Termination Provisions and Consequences, Martin Marietta Energy Systems, Inc., July 1995.*

2. BACKGROUND

2.1 CONTRACTING CONSIDERATIONS

Three basic considerations govern development of a strategy to deal with the power contracts. These considerations are addressed in the following sections.

2.1.1 TERMINATION NOTIFICATION PROVISIONS

First, it is important to recognize that the termination notification provisions in both power contracts provide for large economic incentives for prompt notification to the power suppliers. The cost of delaying notification to either EEI or OVEC will be about \$150,000 per day for unused demand charges alone. The lease between USEC and DOE requires that USEC give DOE 2 years' notice before returning a GDP to DOE. However, the power contracts between DOE and the power suppliers require a longer termination notice before termination of a power contract (3 years in the case of OVEC, 5 years in the case of EEI). It is likely that DOE will have an additional advance warning in the event USEC elects to terminate operations at one of the GDPs. This additional advance warning would likely be 1 year in the case of OVEC and 3 years in the case of EEI. At the time of USEC's notification, DOE will have to be prepared to negotiate with the power suppliers for the power DOE will need during cell treatment and after shutdown.

2.1.2 CONTRACTUAL CONCERNS

The second important consideration is a recognition that these are contractual concerns between three parties (DOE; USEC; and the power supplier, either EEI or OVEC) in a commodity market (electricity). Each party has certain rights and obligations. These rights and obligations are based upon the power contracts between DOE and EEI, and DOE and OVEC; the lease between DOE and USEC; and the MOA between DOE and USEC. These provisions are also summarized in EFS-95-003³. Although it is possible to enumerate the various options available to each party, it is not possible to state what options each party will exercise at the time of the contract termination. It is also possible that contract provisions can be changed if it is to the benefit of both parties.

2.1.3 UNKNOWN AND CHANGING FACTORS

The third important consideration is uncertainty and change. There is uncertainty on all sides of this issue and with all parties concerned.

From DOE's perspective, it is not known whether cells will be treated before or after the GDP is returned nor how much power will be needed. What appears to be an optimal treatment plan today may not be the one selected when it comes time to treat the plant, because of changes in plant conditions, treatment technologies, or regulations.

From USEC's perspective, it is not known which GDP will be shut down nor what power and production levels will be needed between the time USEC notifies the power suppliers, through DOE, that USEC will no longer need production power and the end of the contract. USEC is under no obligation to inform DOE of USEC's plans prior to the notification period. Those plans will likely change over time as the world market for enrichment changes.

Perhaps the greatest uncertainty lies with the power suppliers. The electric power industry is going through a fundamental restructuring. The Energy Policy Act of 1992 and the Federal Energy Regulatory Commission (FERC) Notice of Proposed Rule Making (NOPR) issued in March 1995 are designed to bring competition to the wholesale power market. In addition, many states are looking at the possibility of competition in the *retail* market. The value of the released power may change radically over the next few years, as may the number of alternative options available to DOE.

2.2 PRELIMINARY STRATEGY FOR POWER CONTRACTING

The most prudent strategy is to remain flexible and be able to respond rapidly when necessary. DOE can best do this by:

- remaining aware of each party's contractual options and obligations;
- keeping abreast of the value of the released power in the regional markets;
- determining the amount and duration of cell treatment power required;
- negotiating with USEC to perform cell treatment before return of the GDP to DOE;
- determining the amount of post-shutdown power needed;
- notifying the affected power supplier as quickly as possible of the desire to terminate the power contract;
- negotiating any desired transfer of power between GDPs or sale of power that may reduce unused demand or other charges; and
- negotiating the best deal possible for supply of cell treatment and post-shutdown power to the plant either under the existing contract, as a new contract with the existing supplier, or with a new supplier.

The last three items are mutually dependant and will have to be done simultaneously.

3. DISCUSSION

3.1 CELL TREATMENT POWER REQUIREMENTS

Cell treatment is a production-related function and necessitates the operation of production equipment. Power requirements tend to be high compared with other post-shutdown functions. The price of power is important in calculating the total cost of cell treatment. To the extent possible, it will be advantageous to treat cells with power from the existing power suppliers under the existing

contracts. To this end, DOE should negotiate with USEC to have treatment conducted before termination of the existing power contract, while the GDP is still producing useful separative work.

DOE holds the power contracts, but USEC is responsible for scheduling production and production power. If USEC will not allow cell treatment under the existing power contract (or if USEC insists on passing unused demand charges to DOE), DOE has three other options for obtaining cell treatment power. All three options will have to be evaluated at the time of USEC's notification to determine which is the least expensive.

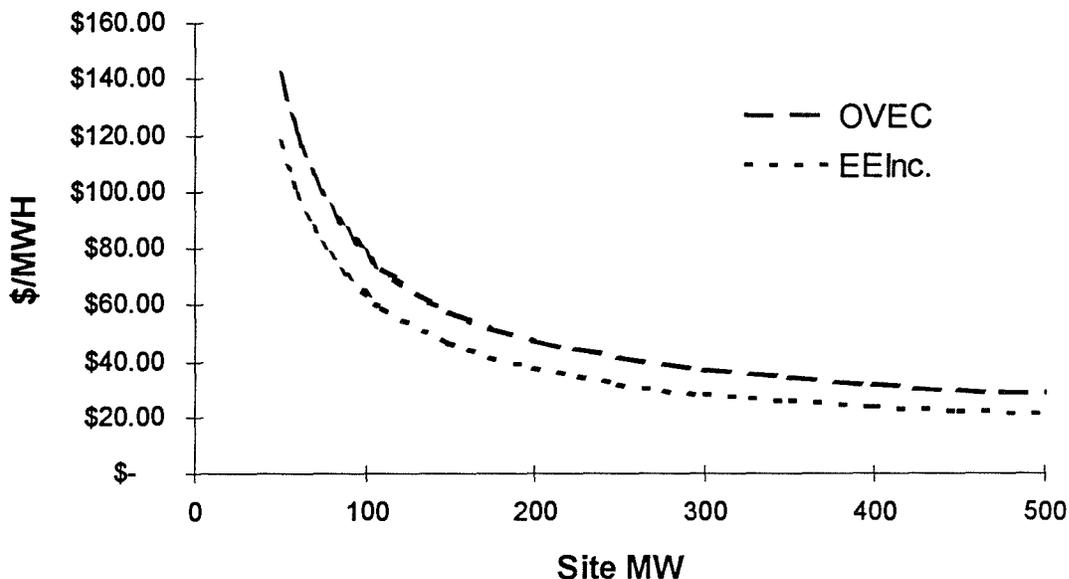
The first two options are those DOE has for obtaining power for post-shutdown activities and are described more fully below. DOE should first negotiate with the current power supplier (either EEI or OVEC) to determine if the supplier is willing to supply the needed power and at what cost. DOE should also begin negotiations with area utilities to determine the cost and availability of power for cell treatment. On the basis of the historical performance of the utilities in the Paducah and Portsmouth areas, contracting for power through standard industrial rates could cost \$12 to \$30 per megawatt hour (Mw-h) more than obtaining it from EEI or OVEC (see Table 1). A 300-megawatt (Mw) total plant treatment load would then cost \$31 to \$79 million more per year if contracted for through industrial rates than if supplied through the existing contract arrangements.

The third option available to DOE is to delay termination of the existing power contract until cell treatment is completed.⁴ This will require that DOE pay the unused demand charge for power not taken as well as the usual price for the required power. This results in a power price that declines significantly as more power is taken. The resulting power price for a range of site power levels is given in Figure 1.

DOE will have to evaluate the three options and select the least costly approach. This decision should be made quickly after USEC notifies DOE of USEC's desire to terminate one of the power contracts because of the \$150,000/day unused demand cost. Unfortunately, much of the necessary negotiations and analysis cannot be performed significantly ahead of time, because the power market is changing so drastically.

⁴In the case of EEI, DOE would also exercise the option to reduce the contract demand by 10%. This has been assumed in the analysis. OVEC contract demand can be reduced by 300 Mw each 6 months such a reduction necessitates 5 years' notice. It will probably not be possible to give that much advance notice; however if USEC gives DOE sufficient warning, DOE should exercise this option with OVEC as well. The analysis assumes USEC does not give sufficient warning.

Figure 1: Power Costs Resulting From Delay in Contract Termination



3.2 POST-SHUTDOWN POWER REQUIREMENTS

The exact amount of power that will be needed after shutdown will not be known until the next mission for the plant site is determined. The availability of a strong electrical system and an abundant source of power may influence the choice of mission. In any event, continuing restoration and security activities will probably consume 10 to 15 Mw. A detailed audit of plant auxiliary loads should be conducted before negotiations to supply this power are started, to help determine the exact requirements. Although this load is far below past requirements for either GDP it is still a significant industrial load and should give DOE some negotiating strength.

Basic characteristics of the load will change. Currently, PORTS has an essentially base-loaded, flat, around-the-clock load. PGDP has a minimum base load but the majority is price sensitive. The new load will likely be a more traditional industrial/commercial load with lower load factor and peaks that coincide with other utility loads. The load will probably peak during the day and be lowest at night. It will also probably have a summer air conditioning peak for office cooling and a somewhat lower winter peak. If the steam plant is not operating, the winter peak will be higher for heating loads.

Changing from a flat or price-sensitive load to a more traditional industrial/commercial load will result in an increased cost of supplying that load. Whether post-shutdown power is procured under traditional regulated, cost-based rates or under more open market conditions, DOE may well pay more for power than under the GDP power contracts.

On the other hand, nothing is known for sure. Along with all the other changes occurring in the electric power market, the impacted power supplier will also be undergoing a fundamental change in its mission. This is more important for OVEC than for EEI, but it will affect either supplier. DOE should negotiate first with the impacted power supplier to try and obtain post-shutdown power under substantially the same terms as it currently receives power.

If the current power supplier declines to provide power to the GDP after shutdown, DOE will have to negotiate a power contract with another area utility. The choices available will depend upon how much restructuring has occurred and what the relevant state utility commission is allowing at the time. Even today there may be some choice, because it can be argued that the GDPs are not currently in any utility's service territory. The current "choices" for PGDP would include Jackson Purchase, Kentucky Utilities, and Tennessee Valley Authority (TVA). The "choices" for PORTS would include Ohio Power and Columbus & Southern Ohio Electric Co. The latest reported industrial rates for each of these utilities are listed in Table 1.

Table 1. Electric Power Industrial Prices and Loads for Selected Utilities

Plant and Utility	Data Year	\$/Mw-h Industrial	Average Mw Industrial	Average Mw Total
PGDP				
EEI	1995	21.71	1470	1470
Kentucky Utilities	1994	33.42	500	1486
Jackson Purchase	1990 ^a	42.96	8	51
TVA	1990 ^a	39.60	2128	11,542
PORTS				
OVEC	1995	18.97	1766	1766
Ohio Power	1994	31.46	2280	3508
Columbus & Southern	1994	48.65	340	1616

^a Latest year for which data is available

The average size of the current industrial load and the total average load for each utility are included in Table 1 as well. Under the traditional power industry structure, this information would give an indication of the utilities' ability to absorb this additional load. Under current practice, the utility will likely purchase the power on the open market. The utility should have no difficulty finding the required power, because termination of the much larger GDP load will have freed up generating capacity. Including the current size of the average loads does give some indication of the relative market power DOE will have when negotiating with the utility.

Although the information is not included in Table 1, the split between demand and energy charges will be important as well. To be of use, it will be necessary to characterize the nature of the post-shutdown load. The daily and seasonal peaks should be determined, along with the potential for demand management (peak shaving).

If the electric utility industry restructuring has progressed as far as allowing open retail access the list of potential suppliers will greatly increase. A 10-Mw load should be quite attractive in this new market. The selection process will be more difficult, but the potential economic rewards will be greater. A \$5-Mw-h reduction in proposed rates would result in annual savings of \$438,000 for a 10-Mw load.

4. SUMMARY

The power contracts for the GDPs were designed to procure very large quantities of power for the enrichment of uranium. After USEC is through using one of the GDPs and the plant is returned to DOE, DOE will have to arrange for power for continued activities. DOE may also have to arrange for power for cell treatment if USEC will not allow cell treatment before it returns the GDP to DOE.

Contractual arrangements between USEC and DOE and between DOE and the power suppliers define the obligations and options available to each party. These are described in EFS-95-003.³ Although it is possible to enumerate the various options available to each party, it is not possible to state what options each party will exercise at the time of the contract termination. It is also possible that contract provisions can be changed if it is to the benefit of both parties.

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competition in the retail market. The value of the released power may change radically over the next few years, as may the number of alternative options available to DOE.

The most prudent strategy, then, is to remain flexible and be able to respond rapidly when necessary. DOE can best do this by:

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