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GULF POWER
A SOUTHERN COMPANY

September 30, 1999

Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee FL 32399-0870

Dear Ms. Bayo:

Enclosed for official filing are an original and 10 copies of nine updated pages to company-specific section of the GPIF manual. These pages are: Sheet No. 4.300, 4.301, 4.302, 4.303, 4.304, 4.305, 4.306, 4.307, and 4.308.

The changes to the GPIF manual are submitted for administrative approval. Upon approval of the updated pages, please return one copy to my attention.

Sincerely,

Susan D Ritenour

Susan D. Ritenour
Assistant Secretary and Assistant Treasurer

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cc: Beggs and Lane
Jeffrey A. Stone, Esquire
Florida Public Service Commission
Sid Matlock

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III. Gulf Power Company

3.1 Definitions

The following definitions are applicable in addition to those shown in Section 2, Technical Terms and Abbreviations.

Term	Abbreviations
Average Kilowatt Load The average kilowatt load that a unit was operated at during a given period of time. $AKW = \frac{KWH}{\Sigma HR_i}$	AKW
Coal BTU BTU boiler input from coal fuel including lighter oil amounts, during a specified calendar period of time.	BTUC
Gas BTU BTU boiler input from gas fuel during a specified calendar period of time	BTUG
Average Net Operating Heat Rate The average net operating heat rate during a specified period of time.	Oper. BTU/AKW HR
Input/Output Equation Regression Constant	C1
Input/Output Equation Regression Coefficients	C2, C3, C4 ... Cn
Gas Adjustment Factor Conversion factor for converting gas BTU boiler input for converting coal BTU boiler input.	GF
Coal Heat Content Average heating value of coal fuel consumed over a given period of time. This independent variable may be used when required to produce an adequate target equation.	BTU/LB

Term	Abbreviations
Hour	HR
Hours at Load i Number of hours during a specified calendar period of time the unit was operated at the i th kilowatt load level.	HR_i
Number of Operating Hours Number of hours during a specified calendar period of time the unit was operated.	ΣHR_i
i th Kilowatt Output Level The i th net kilowatt output level of the unit during a specified calendar period of time.	KW_i
Load Square Range Factor A combinant variable considering the weighted amount of time a unit was loaded at various KW load levels and the square of the load. $LSRF = \frac{\Sigma KW_i^2 * HR_i}{\Sigma HR_i}$	LSRF
Start up Energy Energy input to the boiler during unit start up and prior to synchronization.	SUE
Causative Variables Independent unit related variables upon which it is hypothesized that the BTU consumption rate for the unit may depend.	$VAR_1, VAR_2, \ldots VAR_n$

3.2 Basis for Generating Unit Selection

The annual fuel and purchased energy savings to the Company's customers estimated to result from improving equivalent availability by thee percent (3%), where not limited, and from improving heat rate one hundred (100) BTU/KWH shall be calculated for each eligible unit.

Those units with the largest savings estimates which comprise approximately eighty percent (80%) of the total estimated savings associated with improving all eligible units, shall be selected for inclusion in the GPIF.

Eligible units shall mean steam units which have been commercially operated by the Company for at least one year, are no longer under manufacturers warranty, and whose efficiency and reliability characteristics are not expected to be altered by any ongoing research during the performance period.

3.2.1 Generating Units

Units meeting the GPIF criteria are:

Christ 6
Christ 7
Smith 1
Smith 2
Daniel 1
Daniel 2

3.3 Methodology for Determination of Equivalent Availability Targets and Ranges.

3.3.1 Equivalent Availability Targets

3.3.1.1 Target Equivalent Availability Equation

The equivalent availability target shall be determined for each unit included in the GPIF by determining performance period values for period hours (PH), planned outage hours (POH), reserve shutdown hours (RSH), and equivalent unplanned outage rate (EUOR), substituting these into the following equation, and completing the calculation for target equivalent availability (EA).

$$\text{Eqn. 1} \quad EA = \left[1 - \frac{(POH + EUOR * (PH - POH - RSH))}{PH}\right] * 100$$

3.3.1.2 Target Planned Outage Hours

The target planned outage hours, POH, to be used in equation 1 shall be determined for each GPIF unit as the sum of the expected durations of all planned outages forecast to occur within the performance period for the particular unit.

The duration of each planned outage shall be based upon similar historical outage experience, the work scope of the outage, estimates of subcontractors, vendor recommendations, management judgement or a combination of the above.

Where a planned outage for inspection is involved, the outage duration forecast will consider the uncovering and correction of typical minor problem areas only, unless there is significant reason to believe that major corrective action may be required.

3.3.1.3 Reserve Shutdown Hours

Reserve shutdown hours for each GPIF unit shall be forecast as zero for the performance period unless there is significant evidence that reserve shutdown hours will not be zero.

3.3.1.4 Target Equivalent Unplanned Outage Rate

The target equivalent unplanned outage rate for each GPIF unit shall be determined as the five year historical average of the equivalent unplanned outage rates for the same calendar period as the performance period. The equivalent unplanned outage rate for each similar historical period shall be calculated as:

$$\text{Eqn. 2} \quad EUOR = \frac{(FOH + EFOH + MOH + EMOH)}{(PH - POH - RSH)}$$

3.3.2 Equivalent Availability Ranges

3.3.2.1 Maximum Attainable Equivalent Availability

The maximum attainable equivalent availability for each unit shall be determined as was the target equivalent availability except that the next to the best (lowest) quivalent unplanned outage rate, EUOR, experienced by the unit in the last five similar historical periods shall be used.

3.3.2.2 Minimum Attainable Equivalent Availability

The minimum attainable equivalent availability for each unit shall be determined as the lower of:

The equivalent availability which results from using the next to the worst (highest) equivalent unplanned outage rate, EUOR, experienced by the unit in the last five similar historical periods along with target planned outage hours in equation 1, or

the equivalent availability which results from deducting the difference between the maximum attainable equivalent availability and the target equivalent availability for the unit from the target equivalent availability.

3.4 Methodology for Determination of Heat Rate Targets and Ranges

3.4.1 Average heat Rate Targets

3.4.1.1 Use of Multiple Least Squares Regression Analysis

Average heat rate targets for each unit included in the GPIF shall be determined from multiple least squares regression analyses of each unit's historic BTU energy consumption per hour as a function of certain causative variables.

The general form of the input/output equation used for analysis shall be:

Eqn. 1 $$\frac{\text{Oper. BTU}}{\text{HR}} = \frac{\text{BTUC} + \text{GF} * \text{BTUG} - \text{SUE}}{\text{HR}_i} = C1 + C2 * AKW + C3 * LSRF + C4 * VAR1 + \ldots + CN * VAR_n + C5 * BTU/LB$$

The final term (C5 * BTU/LB) may be used when significant changes in coal heat content between the historical and forecast values are expected.

3.4.1.2 Determination of Regression Coefficients

The regression constants of each unit's input/output equation shall be determined by applying Equation 1 to weekly observations from the most recent three (3) years operating experience of the unit.

Where three years of the necessary actual observation data is not available, the most recent data available of lesser period shall be used.

Actual observation data which is known to be defective, such as may result from inoperative or malfunctioning fuel measuring equipment, or whose BTU/HR value differs by ten percent (10%) or more from its predicted value based upon an initial regression equation shall be eliminated. Eliminated data will not be used for determining the regression coefficients of the input/output equation utilized to set the unit heat rate target.

Stepwise regression analysis shall be used, and no causative variable shall be retained in the target input/output equation if the coefficient associated with such variable is not significant using a ninety percent (90%) confidence interval.

If stepwise regression does not result in the retention of either unit load variable, AKW or LSRF, the more significant of the two will be retained in the target input/output equation, the previous paragraph notwithstanding.

In the case of intercorrelated causative variables, other than AWK and LSRF, the more significant variable will be retained in the target input/output equation and the related variable(s) discarded.

3.4.1.3 Determination of Target Heat Rate Equation from Target Input/Output Equation

The input/output equations developed per paragraphs 3.4.1.1 and 3.4.1.2 shall be converted to average net operating heat rate equations by dividing both sides of equation 1 by the average kilowatt load, AKW. The result is as shown below:

$$\text{Eqn. 2 } ANOHR = \frac{\text{Oper. BTU}}{AWK * HR} = \frac{(C1 + C4 * VAR1 + \ldots + Cn * VARn)}{AKW} + C2 + C3 * \frac{LSRF}{AKW} + C5 * \frac{BTU/LB}{AKW}$$

3.4.1.4 Determination of Average Heat Rate Targets

The target average heat rate for each GPIF unit shall be determined by forecasting values for the independent (causative) variables of equation 2 for the future GPIF performance period, inserting these values into equation 2, and completing the calculation for the target heat rate, ANOHR. Independent variable BTU/LB need only be forecast and used when necessary to account for significant differences in coal heat content between the historical and the forecast values.

3.4.1.5 Alterations to Target Heat Rate Methodology

Should an adequate number of data observations to produce equation 2 for each GPIF unit be unavailable, or should a unit be scheduled to be physically altered in the performance period by government mandate or because of the economic benefit of such alteration to Company and Customer and such alteration will adversely affect the unit's heat rate characteristics, the Company shall either obtain the necessary number of observations from an earlier period, use engineering analyses,

other appropriate means, or a combination of these as warranted to produce equation 2. If one of the aforementioned alternative methods is necessary, the Company shall use and present to the Commission the methodology which it believes best represents what the input/output curve of the subject GPIF unit will be in the performance period assuming there is no additional action or inaction regarding the unit by the Company beyond current practice.

If for some reason the future value of a causative variable, other than those related to operating load levels, cannot be reliably determined, the Company shall estimate to the best of its engineering expertise the value of the term in equation 2 for the performance period.

3.4.1.6 Gas Factor

The gas factor, GF, shall be calculated from actual operating data for each coal/gas burning unit individually.

3.4.2 Average Heat Rate Ranges

The minimum attainable heat rate value for the performance period for each GPIF unit shall be established at ninety seven percent (97%) of the target heat rate.

The maximum attainable heat rate value for the performance period for each GPIF unit shall be established at one hundred and three percent (103%) of the target heat rate.

3.4.3 Adjustments to Average Heat Rage

Since performance targets are set prospectively in the GPIF, certain circumstances may arise during the six month period which warrant adjustments to be made in the final GPIF calculation. Adjustments to the average heat rate performance indicator are necessary to reflect differences between actual values which occurred during the period and forecast values of variables used as part of the target heat rate setting methodology, and may be necessary to offset the effect of an externally caused disaster. A prime example of the first type of adjustment are adjustments needed to reflect changes in the economic dispatch of units not anticipated in advance. An example of the second type of adjustment might be continued economic operation of an efficiency impaired turbine where the impairment was the result of blade damage predicated by material failure or blade removal based upon vendor recommendation.

Adjustment for differences between actual and forecast values of the target setting variables shall be calculated as the target heat rate less what the target heat rate would have been established at had the actual variable values been known for the unit for the period.

Table 1 graphically illustrates the method for calculating the adjustment for a single target setting variable. The adjustment to the actual average heat rate performance indicator is the vertical distance between the target average heat rate curve at the actual variable value for the period and the target average heat rate curve at the forecasted variable value for the period.