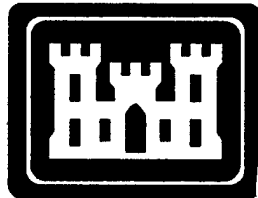




**Department of the Army  
Savannah District  
Corps of Engineers**



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**Liquefied Petroleum Gas (LPG)  
Storage Facility Study  
Fort Gordon, Georgia**

**Final Submittal**

**S-E Project No. 7469B  
September 1992**

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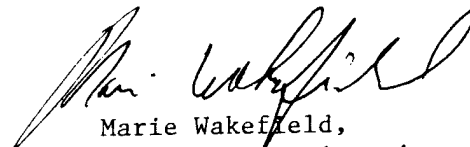


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## **1. EXECUTIVE SUMMARY**

### **1.1 Introduction**

Fort Gordon currently purchases natural gas from Atlanta Gas Light Company under a rate schedule for Large Commercial Interruptible Service. This offers a very favorable rate for "interruptible" gas service, however, Fort Gordon must maintain a base level of "firm gas", purchased at a significantly higher cost, to assure adequate natural gas supplies during periods of curtailment to support family housing requirements and other single fuel users.

It is desirable to provide a standby fuel source to meet the needs of family housing and other single fuel users and eliminate the extra costs for the firm gas commitment to Atlanta Gas Light Company. Therefore, a propane-air standby fuel system is proposed to be installed at Fort Gordon.

### **1.2 Existing Natural Gas Service**

Natural gas service to Fort Gordon is furnished by an 8" main, owned by Atlanta Gas Light Company, that bisects the fort and is also used to deliver

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natural gas to private communities neighboring the fort. There are numerous branches off the main that deliver natural gas to all of the natural gas users, both large and small, on the fort. The larger users have already been converted to dual fuel capabilities so they can be switched to fuel oil as their back-up fuel, at times when natural gas is curtailed.

The natural gas fired equipment in family housing and the other, smaller single fuel equipment are not convertible to dual fuel capabilities. To maintain a firm level of natural gas and avoid curtailment of service to these users, Fort Gordon has committed to an additional expenditure that has averaged approximately \$830,000 per year for the last four year period from July, 1988, through June, 1992.

**1.3 Energy Consumption**

Natural gas consumption is measured in therms, with 1 therm equalling 100,000 BTU's per hour in heating value. The natural gas consumption at Fort Gordon has averaged approximately 5.5 million therms per year for the past four year period. Of this total, approximately 4.1 million therms were

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purchased at the premium rate for firm gas and only 1.4 million therms were purchased at the more economical interruptible rate.

#### **1.4 Energy Cost Savings Opportunities Investigated**

There were a total of seven energy cost savings opportunities investigated using life cycle cost analysis techniques.

The first three opportunities were incremental reductions in the firm gas commitment from the current level to zero, without providing any type of standby fuel system for backup. The cost savings were compared with the potential penalties that could be imposed if excessive or "unauthorized" gas consumption occurred during periods of curtailment.

Two additional opportunities investigated incremental reductions in the firm gas commitment with installation of a "peak shaving" propane-air system to furnish the balance of fuel required during times of natural gas curtailments.

The sixth and seventh opportunities investigated the total elimination of the firm gas commitment and the installation of a "standby" propane-air system to

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furnish the total fuel requirements for family housing and other single fuel users at times when natural gas is curtailed. One of these opportunities involved relocation of the existing gas main and the other did not.

**1.5 Conclusions and Recommendations**

Considerable life cycle cost benefit is available to Fort Gordon with the installation of a propane-air standby system to back-up the natural gas fuel supply and elimination of the requirement to purchase firm gas from the current supplier.

The estimated construction cost is \$2,950,000 including SIOH and design cost. This cost includes installation of the propane-air standby system, the initial supply of propane, and relocation of the Atlanta Gas Light main to allow the distribution system on the fort to be isolated from the gas company when service is curtailed and propane-air is to be used as the fuel.

The annual estimate savings is approximately \$830,000, the average current premium paid for firm gas.



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The savings to investment ratio (SIR) for this opportunity is 5.18 and the simple payback period is 3.36 years.

It is, therefore, recommended that a propane-air standby system be installed, and that a new gas main be constructed across the fort.

It is further recommended that negotiations be conducted with Atlanta Gas Light Company for alternatives to the gas line relocation in order to further enhance the economic benefits of the propane-air standby system.