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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

B-163058

JUNE 2, 1980

The Honorable Harold Brown
The Secretary of Defense

Attention: Assistant for Audit Reports
Room 3A336
ASD (Comptroller)

Dear Mr. Secretary:

Subject: Army Procurement of 10kW, 60Hz Gas Turbine Generators is Becoming Even More Questionable Due to Rising Fuel Costs (PSAD-80-54)

In our report to the Congress dated August 9, 1979 (PSAD-79-95), we stated that our review of the Army's intended procurement of the 10-kilowatt (kW), 60-hertz (Hz) gas turbine generator had disclosed that it did not meet the Army's requirements. The generator's reliability was too low, fuel consumption was too high, and life-cycle costs were excessive. DOD subsequently stated that it would consider all pertinent factors before making a decision at the Development Acceptance, In-Process Review to type classify and procure the gas turbine generator.

The purpose of this report is to update certain information in our previous report since the Army has still not decided whether to buy gas turbines or diesels. The Army plans to hold an In-Process Review within several months to decide whether or not to authorize production of the 10kW gas turbine generator.

The cost advantage of the diesel over the gas turbine has increased dramatically since we issued our first report because of increasing fuel costs. Fuel costs have risen from 46 cents a gallon to over $1 a gallon, and all indications are that they will further increase. Many have

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estimated that fuel prices will rise to $2 a gallon by the end of 1980 with some estimating $3 a gallon not long after. These fuel costs were not even on the horizon when development of the gas turbine generator began many years ago.

EFFECT OF INCREASED FUEL COST ON LIFE-CYCLE COST

Our original report stated that the Army could save from $275 million to $1.6 billion over 20 years if it purchased 5,938 diesel generators instead of the 10kW gas turbines. A large part of these savings were based on the lower fuel consumption of the diesel, using a fuel cost of 46 cents a gallon. With fuel now costing over $1 a gallon and certain to go much higher, the potential savings figures in our original report are now obsolete. The potential savings have increased dramatically with higher fuel prices as shown below.

	$1 a gallon		$2 a gallon		$3 a gallon	
Annual operating hours	400	4,000	400	4,000	400	4,000
	(000,000 omitted)					
Gas turbine	$450	$3,104	$583	$4,439	$717	$5,774
Diesel	120	923	152	1,241	134	1,560
Savings	$330	$2,181	$431	$3,198	$533	$4,214

The graphs in enclosure I show the differences in life-cycle costs over 20 years of the gas turbine and diesel generators assuming various fuel costs. At $2 a gallon the Army could save between $431 million and $3.2 billion by purchasing diesel generators instead of 5,938 gas turbine generators. At $3 a gallon the Army could save between $533 million and $4.2 billion.

RELIABILITY

Our previous report stated that the 10kW, 60Hz gas turbine generator had failed so far to meet the Army's minimum reliability requirement of 500 hours mean time between failure, achieving only 323 hours. Although additional testing has been completed since then, the Army has still not determined whether the gas turbine will meet

the minimum reliability requirement. A scoring conference will be held shortly to review test results and determine reliability.

In order for the maintenance cost of the gas turbine and diesel to be the same, the gas turbine's mean time between failure would have to increase to about 830 hours (at a 90-percent confidence level). However, the diesel would still have a significantly cheaper life-cycle cost, with the savings being primarily due to its lower fuel consumption.

CONCLUSIONS

The life-cycle costs of the 10kW, 60Hz gas turbine generator have increased greatly since we issued our original report in August 1979. At that time we estimated that buying diesel generators would result in savings of between $275 million and $1.6 billion. The increases in fuel cost since then have greatly increased the estimated savings. Assuming $3 a gallon for fuel cost during the next 20 years, savings could increase to between $533 million and $4.2 billion.

RECOMMENDATIONS

As stated in our original report, we recommend that the Army be directed to

--buy 10kW diesel generators instead of 10kW gas turbine generators to satisfy 10kW power requirements and

--evaluate using 5kW diesel and gasoline generators before buying 10kW, 60Hz gas turbine generators to satisfy 5kW power requirements.

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As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report. We would appreciate receiving

a copy of your statement when it is provided to the congressional committees.

Copies of this report are being sent to the Director, Office of Management and Budget; the chairmen, House and Senate Committees on Armed Services and Appropriations, House Committee on Government Operations, and Senate Committee on Governmental Affairs; and the Secretary of the Army.

Sincerely yours,

J. H. Stolarow

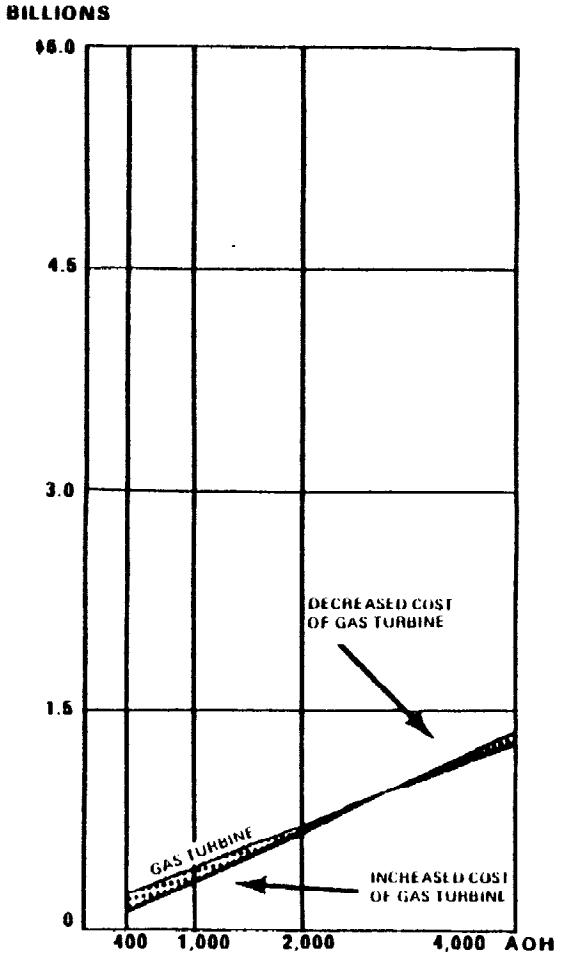
J. H. Stolarow
Director

Enclosure

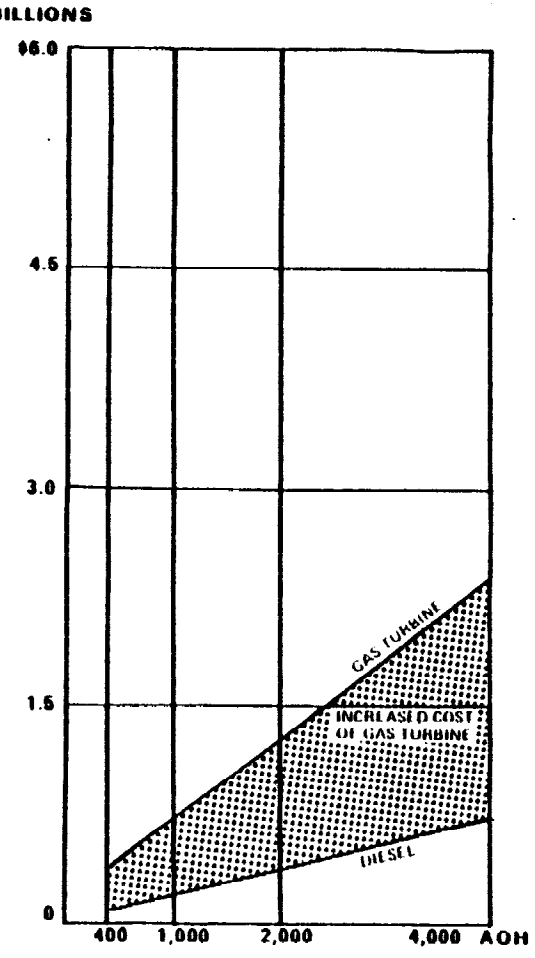
ENCLOSURE I

Increased or Decreased Cost over 20 Years of
Buying 5,938 Gas Turbine Instead of Diesel Generators

ARMY'S ESTIMATE



OUR PREVIOUS ESTIMATE USING $.46 A GALLON



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ENCLOSURE I

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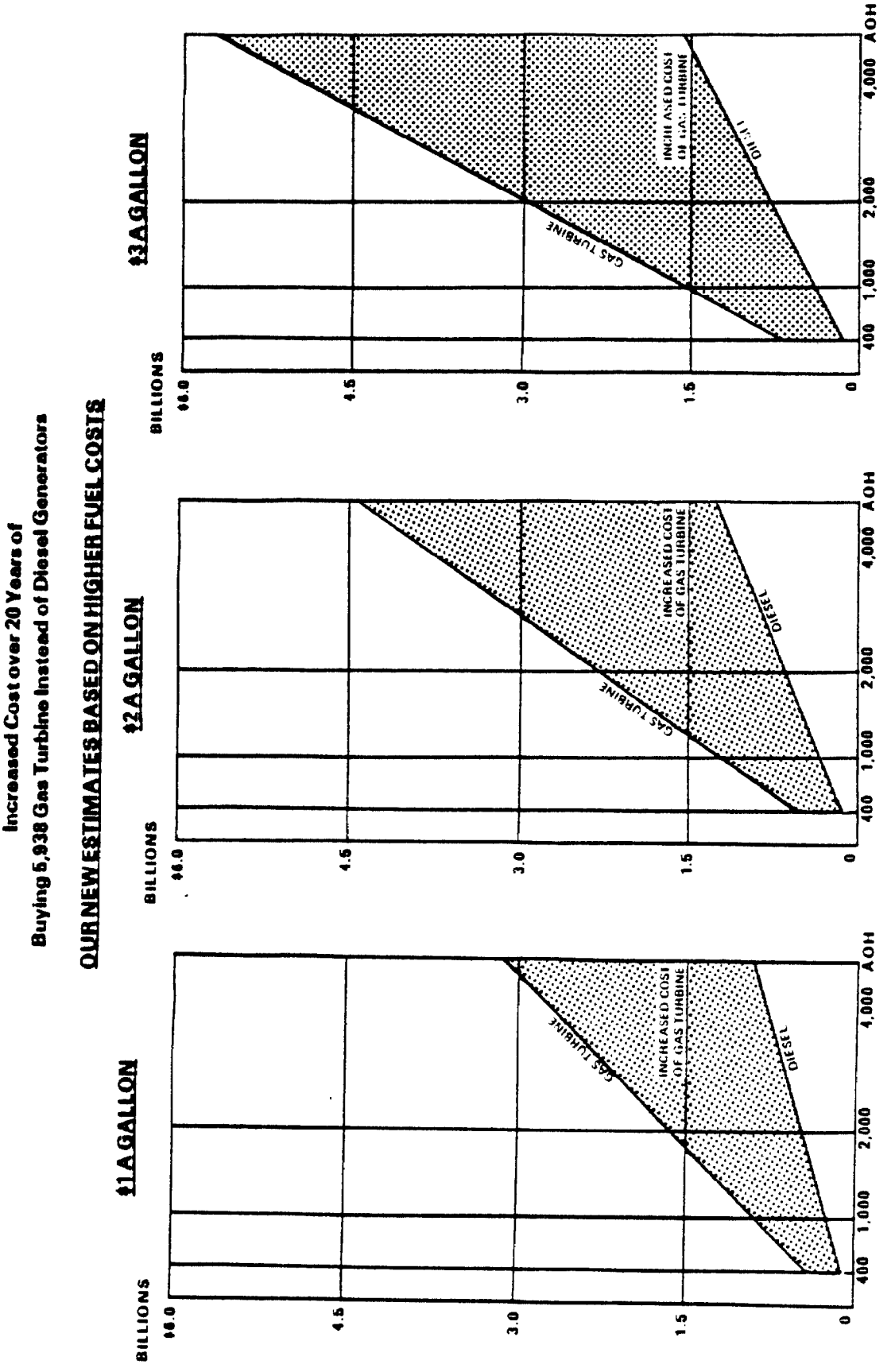
Increased Cost over 20 Years of
Buying 5,938 Gas Turbine Instead of Diesel Generators
OUR NEW ESTIMATES BASED ON HIGHER FUEL COSTS
$1A GALLON
$2A GALLON
$3A GALLON
BILLIONS
$6.0
4.5
3.0
1.5
0
400
1,000
2,000
4,000
AOH
GAS TURBINE
INCREASED COST OF GAS TURBINE
DIESEL