123755

BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Status Of The Great Plains Coal Gasification Project

Construction of the Great Plains coal gasification plant in North Dakota was 95 percent complete and only about 2 weeks behind schedule as of November 30, 1983. Cumulative project costs were less than originally estimated for this date.

Due to a drop in forecasted energy prices, Great Plains, in September 1983, projected that plant operations could result in large after-tax losses and negative cash flows for the sponsors. Great Plains notified the Department of Energy that it was considering terminating its participation in the project in the absence of additional federal assistance. In this regard, additional assistance in the form of price guarantees for the project's synthetic natural gas are being considered by the U.S. Synthetic Fuels Corporation.

UNITED STATES GENERAL ACCOUNTING OFFICE

123755

GAO/RCED-84-113

MARCH 22, 1984

Request for copies of GAO reports should be sent to:

U.S. General Accounting Office
Document Handling and Information
Services Facility
P.O. Box 6015
Gaithersburg, Md. 20760

Telephone (202) 275-6241

The first five copies of individual reports are free of charge. Additional copies of bound audit reports are $3.25 each. Additional copies of unbound report (i.e., letter reports) and most other publications are $1.00 each. There will be a 25% discount on all orders for 100 or more copies mailed to a single address. Sales orders must be prepaid on a cash, check, or money order basis. Check should be made out to the "Superintendent of Documents".

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-207876

To the President of the Senate and the
Speaker of the House of Representatives

This is the fifth report on the loan guarantee for an alternative fuels demonstration project awarded to Great Plains Gasification Associates. The report is required by the Department of Energy Act of 1978--Civilian Applications (Pub. L. No. 95-238). We reviewed the status of the project and Great Plains' analyses of the project's economics. Except where noted, the report discusses matters relating to these issues through November 30, 1983.

We are sending copies of this report to the Director, Office of Management and Budget; the Secretary of Energy; and other interested parties.

Milton J. Socolar

Acting Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

STATUS OF THE GREAT PLAINS
COAL GASIFICATION PROJECT

D I G E S T

In January 1982 the Department of Energy (DOE) awarded a loan guarantee to the Great Plains Gasification Associates--a partnership of five companies--to build the nation's first commercial plant producing synthetic natural gas from coal. The Great Plains project consists of a gasification plant, a coal mine, and a pipeline connecting the plant to an interstate network of natural gas pipelines. (See p. 1.)

The total estimated cost of the project is $2.76 billion. The Department of the Treasury's Federal Financing Bank agreed to loan Great Plains up to $2.02 billion with the amount guaranteed by DOE. The Great Plains partners agreed to contribute up to $740 million from their own resources. (See p. 1.)

The economic outlook for the project is less favorable than originally anticipated in January 1982, and Great Plains requested, in September 1983, price guarantee assistance from the U.S. Synthetic Fuels Corporation. The Corporation initially deferred a decision on this request, but is now considering a new proposal under which Great Plains could receive price guarantees. (See p. 9.)

This is the fifth in a series of semiannual reports on the Great Plains project required by the Department of Energy Act of 1978--Civilian Applications (Pub. L. No. 95-238). The report provides information on the

--status of the project construction, operational startup activities, and costs for the 6-month period ending November 30, 1983, and

--economic viability of the project and the status of Great Plains' efforts to obtain price guarantees from the Corporation.

PROJECT CONSTRUCTION SLIGHTLY BEHIND SCHEDULE--COSTS ARE LESS THAN EXPECTED

As of November 30, 1983, construction on the plant was about 2 weeks behind schedule--an improvement of approximately 1 week over that reported as of May 31, 1983. Coal mine development was ahead of schedule and the pipeline construction was complete. Initial gas production is scheduled to begin during August 1984, with full gas production scheduled for December 1984--the inservice date. Great Plains said that it expects to overcome the slippages at the plant and meet the December 1984 date. (See p. 5.)

Great Plains has an operational startup plan to ensure that full gas production will begin as scheduled. As of November 30, 1983, Great Plains had hired 688 of its expected final personnel complement of 792. Turnover of the plant systems from construction personnel to operations personnel began in August 1983. The turnover is proceeding on schedule according to both Great Plains and DOE project officials. (See p. 6.)

Costs incurred through November 30, 1983, were \$1.41 billion. This was \$134 million less than Great Plains estimated would be spent by that time. About \$33 million of this amount was due to activities planned by this date but not yet performed due to the schedule slippages. The remaining \$101 million resulted from lower materials and equipment costs, lower interest expenses, less-than-anticipated subcontractor costs, and higher than expected productivity by the work force. (See p. 7.)

DOE's Office of the Inspector General audited the eligibility of \$424 million of costs claimed by Great Plains under the loan guarantee from December 1982 through May 1983. As a result of the audit, \$479,000 in costs were disallowed and cannot be included in the amounts guaranteed by DOE. The majority of the disallowed costs were retirement incentive payments totaling about \$416,000. The Inspector General also reserved judgment on \$99 million pending audits by a public accounting firm and sponsors' internal audit groups. (See p. 7.)

GREAT PLAINS PROJECTIONS INDICATE MAJOR CHANGE IN ECONOMIC VIABILITY

During 1983 reductions in DOE forecasted prices of energy products made the project's economic outlook much less optimistic than when the loan guarantee agreement was signed in January 1982.

The reductions affected the outlook because prices of the synthetic gas to be produced are set by a formula which is tied to the future prices of other energy products. (See p. 9.)

Based on DOE energy price forecasts, Great Plains, in September 1983, projected that:

--The project would incur a $1.1 billion loss by 1996 as compared with the original January 1982 projection that showed the project would have a net income of $2.2 billion by that date. (See p. 12.)

--$1.3 billion in additional capital over 10 years would be required from the sponsors to keep the project solvent. In comparison, the January 1982 projection indicated the sponsors would have to provide only $86 million in additional capital over 3 years before the project would remain solvent. (See p. 12.)

--Even considering the tax benefits which enhance the project's economics, the sponsors would experience 10 years of after-tax net losses totaling $718 million and 8 years of negative after-tax cash flow amounting to $758 million. (See p. 12.)

While the September projection indicates the project may have economic problems in the first 10 to 12 years of operations, it also shows that the parent companies of the project sponsors could realize a positive rate of return over the long term. Project income is expected to rise substantially in the project's later years as a result of forecasted increases in gas prices and restore the project's economic viability. GAO calculated, using discounted cash flow techniques, that the after-tax average annual rate of return on investment over the first 20 years would be 13 percent. (See p. 13.)

Great Plains recognizes that the project could be viable in the long term. However, the project sponsors said that the possible large losses and negative cash flows during the initial years of operation, and the risk of even lower synthetic natural gas prices, would have a major negative impact on their regular businesses through increases to their cost of capital as well as the drain on parent company funds. As a result, Great Plains notified DOE in November 1983 that in the absence of further assistance, it was considering terminating its participation in the project. (See p. 14.)

GREAT PLAINS SEEKING
PRICE GUARANTEES

Great Plains, in September 1983, applied to the Corporation for price guarantee assistance under the Energy Security Act (Pub. L. No. 96-294). Great Plains requested that price guarantees be provided through May 1996 for the synthetic natural gas to be sold and, in return, offered a profit-sharing arrangement if future prices are higher than projected in September 1983. Under the proposal, the total price guarantee assistance to Great Plains, coupled with the outstanding loan balance, would not exceed the loan guarantee commitment of $2.02 billion at any time. The profit-sharing provision is intended to prevent a windfall to the sponsors. (See p. 15.)

The Corporation's Board of Directors initially deferred a decision on providing support for the project until legislative actions to provide additional federal assistance to the project were taken. However, it reassessed the Great Plains situation in December 1983. At that time, the Corporation decided to issue a solicitation for proposals to provide a vehicle whereby it could further consider the question of Corporation price supports for the Great Plains project. The solicitation was issued on January 5, 1984, and Great Plains submitted a proposal in response to the solicitation on January 27, 1984. The Corporation is scheduled to make its decision on awarding price guarantees to Great Plains by April 6, 1984. (See p. 15.)

The Ranking Minority Member, Subcommittee on Fossil and Synthetic Fuels, House Committee on Energy and Commerce, questioned the legality of price guarantee assistance because the project already receives federal aid. GAO determined in a January 19, 1984, legal opinion that the Corporation has the authority to provide this type of additional federal assistance to the project, as long as such aid does not effect a transfer of responsibility for the loan guarantee from DOE to the Corporation and the project meets the requirements for assistance under the Energy Security Act. (See p. 16.)

- - - -

GAO requested and received comments from DOE, the U.S. Synthetic Fuels Corporation, and ANG Coal Gasification Company (ANG), the Great Plains project administrator. DOE had no formal comments but did suggest some editorial changes. (See app. I.) The Corporation had no comments on the report. (See app. II.) ANG's comments emphasized the major negative impact the possible losses and negative cash flows would have on the project and suggested a number of editorial and factual changes which were incorporated into the report as appropriate. ANG also suggested that GAO delete the discussion of Great Plains' September 1983 application for price guarantees since a new application for price guarantees has been filed with the Corporation. However, the discussion of the September application was not deleted from GAO's report because the details of Great Plains' new application have not been made available, and consequently the information in the September application is still needed to provide some perspective on the additional federal aid which Great Plains is seeking. (See app. III.)

Contents

ABBREVIATIONS

ANG	ANG Coal Gasification Company
Btu	British thermal unit
DOE	Department of Energy
GAO	General Accounting Office
NEPP	National Energy Policy Plan
SFC	U.S. Synthetic Fuels Corporation

CHAPTER 1

INTRODUCTION

The Department of Energy Act of 1978--Civilian Applications (Pub. L. No. 95-238)--authorizes the Department of Energy (DOE) to provide loan guarantees for alternative fuel demonstration projects. The act also requires the Comptroller General of the United States to audit recipients of the guarantees and report to the Congress every 6 months from the date of enactment (Feb. 25, 1978). The Secretary of Energy awarded the first loan guarantee under the act to the Great Plains Gasification Associates, Detroit, Michigan, on January 29, 1982, for up to $2.02 billion or about 75 percent of the estimated $2.76 billion cost for a project to produce synthetic natural gas from coal.[1]

The Department of the Treasury's Federal Financing Bank agreed to lend Great Plains up to $2.02 billion to build the project with the amount guaranteed by DOE. Great Plains will finance the remaining costs with its own equity. As of November 30, 1983, the date of the most recent data available at the time of our review, Great Plains had borrowed $958 million, and the Great Plains partners had contributed $411 million. The loan and guarantee are "nonrecourse," meaning that DOE's recourse is limited to the project assets if Great Plains defaults.

The Great Plains coal gasification plant will be the nation's first commercial-scale plant producing synthetic natural gas from coal. The project has been designed to produce a daily volume of 137.5 million cubic feet of synthetic gas, the equivalent of more than 23,000 barrels of oil. The facility, being built in Mercer County, North Dakota, consists of three components: a gasification plant, a lignite coal surface mine, and a pipeline connecting the plant to an interstate network of natural gas pipelines. The synthetic gas is produced through a process that uses crushed lignite coal. Smaller pieces of coal not used in the process will be sold to a steam-powered, electric-generating plant owned by Basin Electric Power Cooperative, located adjacent to the coal gasification plant. Basin Electric has agreed to buy about one-half of the coal mine production and share proportionally in the development cost of the coal mine and related facilities. Initial gas production is scheduled to begin during August 1984, with the inservice date--the date for full gas production--scheduled for December 1984.

PROJECT COST AND OWNERSHIP

As of November 30, 1983, the project's estimated completion cost was $2.76 billion. This included $1.73 billion to construct

---

[1]Our previous reports are: EMD-82-55, Mar. 6, 1982; GAO/EMD-82-117, Sept. 14, 1982; GAO/RCED-83-112, Apr. 8, 1983; and GAO/RCED-83-212, Sept. 20, 1983.

the gasification plant, coal mine, and pipeline; $296 million for financing costs during construction; and about $730 million for management reserve and contingencies to provide for unanticipated cost overruns. Of the total, the Federal Financing Bank can lend, and DOE can guarantee, up to $2.02 billion. Great Plains agreed to contribute up to $740 million of its own equity.

Great Plains Gasification Associates--a partnership of five companies--owns the project. The partners and their percent of equity are as follows.

	Percent of equity
Tenneco SNG Inc. (controlled by Tenneco, Inc.)	30
ANR Gasification Properties Company (a subsidiary of American Natural Resources Company)	25
Transco Coal Gas Company (a subsidiary of Transco Companies, Inc.)	20
MCN Coal Gasification Company (a subsidiary of MidCon Corporation, formerly Peoples Energy Corporation)	15
Pacific Synthetic Fuel Company (a subsidiary of Pacific Lighting Corporation)	10
Total	100

PROJECT MANAGEMENT AND OVERSIGHT

Great Plains appointed the ANG Coal Gasification Company (ANG),[2] Detroit, Michigan, as project administrator. ANG is responsible for the day-to-day planning, engineering, designing, and construction of the gasification plant, pipeline, and coal mine. Great Plains provides overall direction to ANG through a management committee composed of representatives from each of the partners.

The Lummus Company and Kaiser Engineers, Inc., are the prime contractors for engineering, procurement, and construction of the gasification plant. The Coteau Properties Company, a subsidiary of North American Coal Corporation, is responsible for developing

---

[2]ANG is a wholly owned subsidiary of American Natural Resources Company.

and operating the coal mine. ANR Pipe Line Company, formerly Michigan Wisconsin Pipe Line Company, provided construction management services for the pipeline.

At the federal level, DOE's Office of Oil, Gas, Shale, and Coal Liquids, Office of the Assistant Secretary for Fossil Energy, is responsible for monitoring the Great Plains project. DOE headquarters delegated responsibility to its Chicago Operations Office for the day-to-day monitoring of the project, which includes determining that a reasonable assurance of debt repayment exists.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our objectives were to (1) update information on the status of the project and ANG's operational startup activities as of November 30, 1983, the date of the most recent data available at the time of our review, (2) evaluate DOE's and Great Plains' analyses of the project economics, and (3) review DOE's monitoring, including the Office of the Inspector General's audit of incurred costs. Our review was conducted between September 1983 and January 1984 and covered the progress of the Great Plains project between May 31 and November 30, 1983.

The information provided is based partly on interviews with DOE officials in headquarters and in Oak Ridge, Tennessee, and Chicago, Illinois; U.S. Synthetic Fuels Corporation (SFC) officials; and ANG officials in Detroit, Michigan, and Mercer County, North Dakota. We also reviewed (1) Great Plains' monthly and quarterly reports submitted to DOE, (2) DOE reports, (3) DOE plans for monitoring operational startup activities, and (4) DOE Office of the Inspector General's October 3, 1983, audit report on incurred costs. We did not review the documentation supporting the audit report because, based on our previous audit work, we believe that the Inspector General's audit plans, programs, and working papers are adequate in scope and detail to enable us to rely on its audit efforts.

Previously, we assessed DOE's and ANG's computer models, which generate data concerning the project's economic viability.[3] We found that the data produced by both models were similar except that DOE's included tax assumptions which ANG's did not. We compared DOE's tax assumptions with existing tax laws and found them to be consistent. During this review, we updated our assessment of ANG's computer model. ANG supplemented their model to include tax assumptions, and we assessed the supplements to the model to determine if ANG's September 1983 mid-case economic projections were comparable with those we calculated. We were able to reconcile the mid-case forecasts of ANG and GAO. We did not, however, obtain information on the tax status of each of the

---

[3] Status of the Great Plains Coal Gasification Project--Summer 1983 (GAO/RCED-83-212, Sept. 20, 1983).

parent companies of the Great Plains' partners. Except as noted, we conducted our review in accordance with generally accepted government auditing standards.

CHAPTER 2

PROJECT STATUS AS OF NOVEMBER 30, 1983

Progress on the coal gasification plant was about 2 weeks behind schedule on November 30, 1983. ANG officials said that they expect to overcome the slippage by using overtime and that the slippage will not adversely affect the scheduled December 1984 date for full gas production.

Great Plains reported to DOE that, as of November 30, 1983, total project costs amounted to $1.41 billion--about $134 million less than Great Plains estimated would be spent as of that date. Funds received from both the Federal Financing Bank and the project partners totaled about $1.37 billion as of November 30.

PHYSICAL PROGRESS

As of November 30, 1983, the gasification plant, including engineering and procurement, was 95 percent complete, compared with a planned 96 percent target for that date. The coal mine was about 83 percent complete, compared with a planned 79 percent target. The pipeline construction was completed in August 1983, 2 months ahead of schedule.

Gasification plant progress

The schedule slippage of the gasification plant has improved since our last report.[1] As of May 31, 1983, the plant was about 3 weeks behind schedule. As of November 30, 1983, it was about 2 weeks behind schedule. Great Plains reports the extent of plant completion using a composite weighted-value percent of completion as follows:

Activity	Weighted percent of total plant	Planned percent complete	Actual percent complete	Percent actual ahead (behind) planned
Engineering	11.20	11.02	11.19	0.17
Procurement	42.10	42.11	42.05	(0.06)
Construction	46.70	42.50	41.52	(0.98)
Overall	100.00	95.63	94.76	(0.87)

The plant's components were in varying stages of completion. The core of the facility--the building and equipment used in gasifying coal--was 82 percent complete. Offsite development (access roads) was 100 percent complete.

[1] Status of the Great Plains Coal Gasification Project--Summer 1983 (GAO/RCED-83-212, Sept. 20, 1983).

According to ANG, the improvement is primarily the result of using more skilled workers than had been anticipated and the timely delivery of materials needed to support their efforts. Further, ANG officials said that they expect to complete the plant's construction by its scheduled date of December 1, 1984. It plans to overcome the current slippage by using overtime and by closely monitoring those areas critical to the orderly transition to the operational phase.

Coal mine progress

Development of the coal mine was about 4 percent ahead of schedule. The following table shows the weighted-value percentages of mine completion:

	Weighted percent of total mine	Planned percent complete	Actual percent complete	Percent actual ahead (behind) planned
Engineering	15.0	14.8	15.0	0.2
Procurement	20.0	11.4	12.0	0.6
Construction	65.0	53.0	55.9	2.9
Total	100.0	79.2	82.9	3.7

Great Plains reported that engineering was accelerated and completed ahead of schedule primarily to support the delivery of coal to Basin Electric in August 1983 instead of the originally anticipated date of January 1984. Procurement was reported ahead of schedule because of the early delivery of a reclamation bulldozer. Construction was ahead of schedule primarily because construction of the second dragline has been accelerated and is about 3 months ahead of schedule. Accordingly, ANG reported that it expects the mine operator to meet its scheduled March 1, 1984, date for delivering coal to the gasification plant.

Pipeline progress

Great Plains plans to transport its gas through a 34-mile pipeline from the gasification plant to an existing interstate pipeline. Construction began in May 1983 and was completed in August 1983--2 months ahead of schedule.

OPERATIONAL STARTUP

Great Plains has an extensive transition program to assure that the December 1984 inservice date--the date the plant begins full gas production--is met. Priorities have been established to test and accept the facility on a system-by-system basis and turn it over to the operations staff in an orderly manner. ANG controls over operational startup include a task force consisting of operations and construction officials, daily meetings with contractor personnel, and weekly reporting to ANG management on the status of the activities.

ANG's plant manager for operations told us that all operational planning and startup activities were proceeding without any major problems. All operational startup activity milestones had been met and turnover of systems were on schedule through November 1983. Further, 688 of the final target of 792 operations personnel had been hired. According to DOE, operational planning and startup activities were progressing satisfactorily.

PROJECT COSTS

Great Plains had originally estimated that project costs would total $1.55 billion as of November 30, 1983, but actual costs were $1.41 billion, about $134 million less than estimated. Of the $134 million difference, $33 million was due to activities, scheduled to be performed by this date, which had not been performed due to the schedule slippage. The remaining $101 million resulted from, among other things, (1) lower costs for materials, commodities, and equipment, (2) lower than expected interest expenses resulting from a more favorable interest rate environment, (3) some subcontracts being awarded at lower amounts than originally budgeted, and (4) higher than expected labor productivity in certain construction areas, such as electrical distribution and waste treatment.

Funds received totaled $1.37 billion. Of that amount, the Federal Financing Bank loaned $958 million and the partners contributed $411 million in equity.

DOE AUDITS OF COSTS

In a previous report,[2] we recommended that DOE initiate audits to determine the eligibility of costs incurred by Great Plains to be included in the amounts guaranteed by DOE. In response to our recommendation, DOE's Office of Inspector General began its audits in November 1982 and plans to audit costs incurred every 6 months.

As of November 30, 1983, three audits had been completed. We reported on the results of the first two audits in our last report.[3] The latest audit report, dated October 3, 1983, covered project costs incurred during the period December 1, 1982, through May 31, 1983. The Inspector General recommended that DOE accept as eligible $324 million of the $424 million claimed by Great Plains. For the remaining $100 million, the Inspector General

---

[2]Status of the Great Plains Coal Gasification Project--August 1982 (GAO/EMD-82-117, Sept. 14, 1982).

[3]Status of the Great Plains Coal Gasification Project--Summer 1983 (GAO/RCED-83-212, Sept. 20, 1983).

reserved judgment on $99 million, pending audits by the public accounting firm for the project and the partners' internal audit groups, and questioned the eligibility of about $1.2 million. The $1.2 million included management incentive compensation, early retirement incentive payments, donations, and return on investment of an affiliated company.

DOE's contracting officer must resolve which of the questioned costs are eligible. On December 2, 1983, DOE's contracting officer notified ANG that $478,933 of the $1.2 million were ineligible. These costs primarily included early retirement incentive payments of $415,704, donations of $12,008, and return on investment of an affiliated company of $49,334. DOE determined that the management incentive compensation of $622,500 was an eligible project cost because it represented a compensation plan for performance and not a profit-sharing plan which would have been ineligible under the loan agreement. Donations of $79,000 were deemed eligible since the payment was made to Mercer County for paving a county road leading to the project site and therefore beneficial to the project.

CHAPTER 3

PROJECT ECONOMIC VIABILITY

The economic outlook for the Great Plains project has deteriorated from that which existed when the loan guarantee agreement was signed in January 1982. Reductions in the forecasted prices of energy products made the project's economic outlook much less optimistic because the expected selling price of the project's synthetic gas is now substantially reduced.

Based on a revised DOE energy price forecast, Great Plains, in September 1983, developed a cash flow projection which showed that the project's economic viability was substantially reduced from original projections. The September 1983 Great Plains projection showed that, should DOE forecasted mid-range prices occur,

--the project, rather than realizing an income of $2.2 billion by 1996 as originally projected, would incur a $1.2 billion loss;

--additional capital required from the sponsors to keep the project solvent would increase from the originally projected $86 million (over 3 years) to $1.3 billion (over 10 years) before the project would maintain a positive cash position; and

--the sponsors would experience substantial after-tax net losses and negative cash flows during the first 10 years of operations.

Nevertheless, while the September projection indicates that the project may have economic problems in the first 10 to 12 years of operations, it also shows the project may still be viable in the longer term. Great Plains' September projection shows that forecasted price increases in the project's later years would restore its economic viability, which we calculated would provide a 13-percent annual rate of return on investment over the first 20 years of operations. However, the sponsors said that the losses during the project's initial years pose too great a risk for the possibility that the project may be profitable in the longer term.

As a result, Great Plains notified DOE that, under the terms of the loan guarantee agreement, it is considering exercising its right to terminate its participation in the project unless it obtains additional assistance. Great Plains is now actively seeking price guarantees from the U.S. Synthetic Fuels Corporation to mitigate the negative near-term economic prospects. A decision on price guarantees for the project is scheduled to be made by April 6, 1984.

FORECASTED REDUCTIONS IN PRICES FOR GREAT PLAINS SYNTHETIC GAS

Project revenues are uncertain even though four pipeline companies have contracted to purchase all the gas produced during the plant's initial 25 years of operation. This is because prices for the synthetic gas to be produced are set by a Federal Energy Regulatory Commission-approved[1] formula which is tied to the future prices of other energy products. The formula sets a base price of $6.75 per million Btu's (British thermal units) in 1980 dollars. This price is adjusted quarterly for inflation and is subject to various "caps" which are tied to the future prices of oil and natural gas.[2]

In March and June 1983, DOE developed preliminary high-, mid-, and low-case energy price forecasts[3] in connection with the National Energy Policy Plan of 1983 (NEPP-1983). DOE forecasts were substantially lower than the forecasts used in January 1982 to justify constructing the project, and as a result the projected future prices for the synthetic gas are now reduced. The following table shows a comparison for 3 future years of the originally projected synthetic gas sales prices and projected June 1983 mid-case synthetic gas sales prices we calculated using Great Plains' pricing formula.

Year	Jan. 1982 projected sales prices[a]	June 1983 projected sales prices[a]
	--------Per million Btu's--------	
1985	$10.34	$ 6.44
1990	15.48	7.23
1995	22.69	11.91

[a]Current year dollars--not discounted.

---

[1]The Federal Energy Regulatory Commission is responsible for regulating the price of natural gas sold in interstate commerce.

[2]During the first 5 years, the price cannot exceed the unregulated price of No. 2 fuel oil. From year 6 to 10, the price will be the greater of the average prices paid by the pipeline companies for the highest 10 percent of domestic natural gas or for Canadian and Mexican gas but in neither case higher than the unregulated price of No. 2 fuel oil. After 10 years, the price will be based on the price of unregulated domestic natural gas. If gas prices are regulated at that time, then the price paid for Canadian and Mexican gas will set the ceiling.

[3]For simplicity, we discuss the forecasted mid-case prices throughout the report. Should high-case prices occur, the project's economic viability will be better than that depicted by the report. If low-case prices occur, the economic viability will be worse. DOE does not claim that any of these price levels is more likely to occur.

According to DOE, oil prices are the key factor in the formula controlling the future prices of Great Plains synthetic gas because a decline in oil prices creates downward pressure on natural gas prices. The NEPP-1983 preliminary forecasts show significant reductions in the projected future prices of oil. DOE attributed the reduction in forecasted prices to several factors, such as unexpectedly low demand for oil, the worldwide recession in 1981, and a worldwide drawdown of crude oil and petroleum product inventories.

RECENT PROJECTIONS INDICATE REDUCTIONS IN THE PROJECT'S ECONOMIC PROSPECTS

The ultimate financial viability of the Great Plains project is extremely sensitive to future energy prices. In our previous report, we found that, based on DOE's March 1983 price forecasts, a consistent 3 percent increase or decrease in synthetic gas prices could result in an annual rate of return to the partners of as high as 27 percent, or as little as nothing over the first 20 years the project operates. Consequently, the reductions in forecasted energy prices, and its resulting impact on the expected price of the synthetic gas, greatly affect the viability of the project. In this regard, recent Great Plains cash flow projections indicate a substantial reduction in the project's economic prospects.

As part of the loan agreement, DOE requires Great Plains to submit a variety of economic data, including an annual cash flow projection showing estimated future revenues, expenses, and similar information. The projection made in January 1982, when the agreement was signed, was based on then existing price forecasts and indicated a favorable economic outlook for the project. Although DOE concluded that some risk existed because of uncertainty about the plant's performance and future economic events, DOE's analysis of the project's economics before signing the loan agreement indicated that the plant would be in a positive cash flow position after 3 years of operations.

In March and September 1983, Great Plains furnished DOE revised cash flow projections. The March projection,[4] based on the future mid-case prices in DOE's March 1983 forecast, indicated a much less optimistic economic outlook for the project because the projected sales prices of the synthetic gas, and consequently project revenues, were significantly lower. The September projection, provided by Great Plains to show the effects of the June 1983 energy price forecasts, depicted a further decline in the economic outlook. The September projection included a detailed analysis of the project's financial situation based on future

---

[4]The March projection, which was Great Plains' first annual cash flow projection, was discussed in our report Status of the Great Plains Coal Gasification Project--Summer 1983 (GAO/RCED-83-212, Sept. 20, 1983).

low- and mid-case energy prices. It indicated more years of losses, much lower net income and distribution of funds back to the partners, and a need for the partners to provide substantially more funds than had been anticipated to keep the project solvent. Moreover, it indicated the possibility of large and prolonged after-tax losses and negative after-tax cash flows.

Projected net income down $3.4 billion; distributions to partners down by $1.5 billion

Great Plains' September 1983 projection indicates much lower amounts of net income and distributions of funds to the partners as compared with the January 1982 projection. The table below shows the differences between the two projections through 1996, the last year covered by the 1982 projection.

Projection	Cumulative net income	Cumulative distributions
	----------millions---------	
January 1982	$2,233	$1,523
September 1983	(1,212)	-
Change	(3,445)	($1,523)

In addition, the 1983 projection indicated losses for the first 10 years, whereas the 1982 projection had indicated losses for only the first 3 years.

Projected additional capital from partners up substantially

The loan agreement provides that, after the plant's inservice date, Great Plains will maintain a positive cash position at all times. In its 1982 projection, Great Plains indicated the partners would have to provide $86 million of additional capital to enable the project to maintain a positive cash position during the first 3 years of operations. In contrast, its September 1983 projection indicated that the partners would have to provide $1.3 billion of additional capital during the first 10 years before a positive cash position would be maintained. Great Plains points out that without these additional funds, the project would be insolvent.

Substantial after-tax losses and negative cash flow

The previous economic information on project net income, distributions, and capital from partners provides only a limited view of the project's economic viability because it does not consider tax factors which may accrue to the partners' parent companies and enhance the project's economics. During the first few years of operations, depreciation and operating losses could be used to offset taxable income from other business, thereby reducing tax obligations. Although the Great Plains partners do not directly benefit from these tax implications, their parent companies do--assuming they are profitable enough to make use of them. In a previous report,[5] we pointed out that Great Plains' March 1983 projection did not--nor was it required to--address the effects of taxes on the partners or their parent companies. Great Plains' September 1983 projection, however, did provide analyses which considered tax implications.

The September 1983 projection indicated large and prolonged after-tax losses and negative after-tax cash flows to the sponsors even if they could use all potential tax benefits. More specifically, the data showed that sponsors would experience 10 years of after-tax net losses (1985-94) amounting to $718 million, and 8 years of negative after-tax cash flow (1989-96) amounting to $758 million.

Our analysis of the mid-case price projections, and a separate DOE analysis of the Great Plains projections, corroborated the extent of after-tax losses and negative cash flows projected by Great Plains.

PROJECT MAY BE VIABLE IN THE LONG TERM BUT CURRENT RISKS UNACCEPTABLE TO SPONSORS

Great Plains' September 1983 projection indicated that while there were economic problems, the project could be profitable to the sponsors over the long term. According to the projection, project income will rise substantially in the project's later years resulting from forecasted increases in gas prices. For example, Great Plains' September 1983 projection indicates that, should the forecasted mid-case prices occur, the sponsors would experience a cumulative after-tax net loss of $31.2 million during the first 15 years of the project's estimated life (1985-99). However, the projection indicates this would eventually be offset by after-tax income of $4.7 billion during the last 10 years of the project's estimated life (2000-09).

Due to the forecasted increase in prices and income, the project could still provide a return to the sponsors. We calculated, for the testimony we presented on October 18, 1983,[6] the sponsors' average annual rates of return on investment over the first 20 years of operations (1985-2004), the period during which Great Plains must repay the federal loan. Based upon the data in the September 1983 projection and other information provided by Great Plains, we found, by using discounted cash flow

[5]Status of the Great Plains Coal Gasification Project--Summer 1983 (GAO/RCED-83-212, Sept. 20, 1983).

[6]Testimony presented to the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, during hearings on the Great Plains project.

techniques, that the average annual rate of return would be 13 percent under the mid-case price forecasts. We also determined that, under the high-case forecasts, the annual rate of return would be 26 percent, while under the low-case forecasts there would be no return on investment.

While Great Plains recognizes that the project may be profitable in the long run, its sponsors are more concerned with the projected adverse effects during the project's initial years. The sponsors emphasize that large after-tax net losses and negative after-tax cash flows during at least the first decade of operations and the risk of even lower prices would diminish sponsors' consolidated earnings for many years, tend to weaken their credit ratings, increase the cost of capital, and drain capital from their regular businesses. According to the sponsors, they give more weight to these factors than to the speculative profits that may be generated a decade from now. The sponsors said that the more near-term problems pose too great a risk, especially since long-term profitability could be realized only if the forecasted rise in energy prices occurs in future years.

Consequently, the partners have notified DOE that they may terminate participation in the project in accordance with the terms of the loan guarantee agreement. The loan agreement permits the partners to terminate their participation before the facility's December 1984 inservice date under certain conditions. One condition is that there is no longer reasonable assurance that the project will generate sufficient funds for Great Plains to

--pay the principal and interest on the federal loan when due,

--make distributions to the partners during the first 10 years of operations that at least equal their contributed equity as of 1 year after the facility's inservice date, and

--repay any other permitted debt by the end of the 10-year period.

Based on Great Plains' projection, the partners notified DOE in November 1983 that they could terminate their participation in the project under the terms of the loan guarantee agreement.[7] Further, Great Plains said that it was seriously considering such termination unless added federal assistance was received on a timely basis.

GREAT PLAINS SEEKING PRICE GUARANTEES

Great Plains is seeking additional federal assistance in the form of price guarantees. In its view, the guarantees are needed to reduce the sponsors' risks to reasonable levels and thereby mitigate the negative near-term economic prospects sufficiently to justify continued involvement. In September 1983 Great Plains filed an application with SFC for price guarantees under the Energy Security Act (Pub. L. No. 96-294, June 30, 1980). Great Plains requested that price guarantees be provided through May 1996, the twelfth year of operation, for the synthetic gas to be sold. The major provisions of Great Plains' application were that

--the proposed guaranteed price would not exceed an average of $45 per barrel of crude oil equivalent in 1983 dollars (equal to $7.76 per million Btu's in 1983 dollars);

--Great Plains would receive payment from SFC equal to the amount, if any, by which the guaranteed price exceeded the actual sales price as set by the pricing formula; and

--the total price guarantee assistance to Great Plains, coupled with the outstanding loan balance, would not exceed the loan guarantee commitment of $2.02 billion at any time.[8]

Further, in return for price guarantees and to prevent a windfall profit to the sponsors in the event higher than forecasted prices occur, Great Plains would agree to a profit-sharing arrangement with SFC, the specifics of which would be negotiated.

---

[7]We discussed the implications of Great Plains terminating its participation in the project in our report Economics Of The Great Plains Coal Gasification Project (GAO/RCED-83-120, Aug. 24, 1983). In summary, we reported that, should Great Plains be able to terminate its participation in accordance with the terms of the loan guarantee agreement, the project sponsors would lose the amount of equity they contributed up to that time. DOE, as loan guarantor, would have to repay to the Department of the Treasury's Federal Financing Bank the funds loaned to Great Plains. DOE would also have a number of options to pursue regarding the project, such as completing construction, selling the project to a third party, or abandoning it.

[8]At first, the price guarantee assistance would be limited to the difference between Great Plains' final guaranteed loan balance and the $2.02 billion loan commitment. As Great Plains pays off portions of the loan balance, however, it would be eligible to receive additional price guarantee assistance.

SFC's Board of Directors, on October 22, 1983, did not permit Great Plains to enter into negotiations with the Corporation for the assistance it was seeking. The Board took this action because it determined that any assistance for the project should first come from legislative actions that would (1) allow the project sponsors to obtain production tax credits authorized by the Crude Oil Windfall Profit Tax Act of 1980 (Pub. L. No. 96-223, Apr. 2, 1980) and (2) permit DOE to convert funds currently set aside for the loan guarantee into funds to provide Great Plains the desired price guarantees.

However, the Board of Directors reassessed the situation and, at its December 1, 1983, meeting, decided to provide a vehicle whereby Great Plains could apply to SFC for price guarantees. SFC's General Counsel said that the Board of Directors reassesed the Great Plains situation because of changed circumstances surrounding the project. The suggested legislative actions, which SFC's directors said would be a more efficient manner to provide additional project support, had not been initiated, and the project sponsors gave formal notice to DOE that they were seriously considering terminating their participation in the project. The General Counsel said that the Board believed it would be irresponsible for SFC not to re-examine the project in light of the changed circumstances and that they decided to issue a solicitation for proposals to provide a vehicle to consider the question of Great Plains financial assistance further. The General Counsel added that, in accordance with the general provisions of the Energy Security Act, the Board determined that a solicitation for proposals would be the appropriate mechanism under which it could consider providing assistance to the Great Plains project.

Subsequently, on January 5, 1984, SFC issued a solicitation for coal or lignite gasification projects seeking financial assistance. Great Plains submitted the only proposal in response to the solicitation to SFC on January 27, 1984; however, the details will not be available until SFC evaluates the proposal and makes its decision on awarding financial assistance to Great Plains. This decision is scheduled to be made by April 6, 1984. SFC expects that a contract under this solicitation, if awarded, will be finalized by August 1984.

The Ranking Minority Member, Subcommittee on Fossil and Synthetic Fuels, House Committee on Energy and Commerce, questioned whether SFC has the authority to provide price guarantees to Great Plains since the project already receives federal aid. In a January 19, 1984, legal opinion,[9] we determined that SFC does have the authority to provide additional federal assistance to the project, as long as such assistance does not effect a

---

[9]GAO opinion B-202463, Jan. 19, 1984, to the Ranking Minority Member, Subcommittee on Fossil and Synthetic Fuels, House Committee on Energy and Commerce.

transfer of responsibility for the loan guarantee from DOE to SFC and the project meets the requirements for assistance under the Energy Security Act.

DOE, SFC, AND ANG COMMENTS

We requested and received comments from DOE, SFC, and ANG. DOE had no formal comments but did suggest some editorial changes. (See app. I.) SFC provided no comments on the report. (See app. II.) ANG's comments emphasized the major negative impact the possible losses and negative cash flows would have on the project and suggested a number of editorial and factual changes which were incorporated into the report as appropriate. ANG also suggested that we delete the discussion of Great Plains' September 1983 application for price guarantees since a new application for price guarantees has been filed with SFC. However, the discussion of the September application is included in our report because the details of Great Plains' new application have not been made available, and consequently the information on the September application is still needed to provide some perspective on the additional federal aid which Great Plains is seeking. (See app. III.)

Department of Energy
Washington, D.C. 20585

FEB 17 1984

Mr. J. Dexter Peach
Director, Resources, Community and
Economic Development Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Peach:

The Department of Energy (DOE) appreciates the opportunity to review and comment on the General Accounting Office (GAO) draft report entitled "Status of the Great Plains Coal Gasification Project--Winter 1983." DOE has no formal comments. Comments of an editorial nature have been provided directly to members of the GAO audit staff.

Sincerely,

Martha O. Hesse
Assistant Secretary
Management and Administration

United States Synthetic Fuels Corporation
2121 K Street, N.W. Washington, District of Columbia 20586 Telephone: (202) 822-6600

February 17, 1984

Mr. J. Dexter Peach
Director
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

The Corporation has reviewed the draft of the semiannual report on the status of the Great Plains coal gasification project, which the General Accounting Office is preparing for release on February 24, 1984. We find it a complete and thorough report and have no comments. I do want you to know, however, that we very much appreciate your courtesy in providing us the opportunity to review this draft document.

Sincerely,

Edward E. Noble
Chairman of the Board

ANG Coal Gasification Company
Project Administrator—Agent
Great Plains Gasification Associates
600 Renaissance Center, Suite 1100
Detroit, Michigan 48243

February 15, 1984

Mr. Dexter Peach
UNITED STATES GENERAL ACCOUNTING OFFICE
Resources, Community, and Economic
Development Division
Washington, D.C. 20548

Dear Mr. Peach:

Enclosed, please find a marked copy of your draft on the status of the Great Plains Coal Gasification Project. This marked copy is being furnished to you with substantive comments for your consideration in response to your letter to Mr. Mermer dated February 10, 1984.

If you have any questions, please feel free to call me at 313/446-6209.

Sincerely,

Robert Dziedzic

Robert Dziedzic
General Auditor

Rd/eb
Enclosure

cc: Messrs. R. E. Boulanger
W. J. Lundberg
M. G. McCombs
N. F. Mermer
L. Sharon

Tenneco SNG Inc • ANR Gasification Properties Company • Transco Coal Gas Company • MCN Coal Gasification Company • Pacific Synthetic Fuel Company

(301639)

27814

AN EQUAL OPPORTUNITY EMPLOYER

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

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE,$300

POSTAGE AND FEES PAID
U. S. GENERAL ACCOUNTING OFFICE

THIRD CLASS