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DATE: 1/14/95

TO: Tom Horn / Mary Power

COMPANY: Panda Energy / Bayerische Vereinsbank AG

FAX NUMBER: 214/980-6815 // 212-210-0354 **PAGES** 41 **+ COVER**

FROM: Clay Jones
ENGINEERING CONSULTING SERVICES
BROWN & ROOT, INC.

COMMENTS: Our initial draft report. Please review and provide comments. A number of points raised can be easily addressed thru discussion. Plse call either Bob Cate at 713-676-5682 or Clay Jones at 713-676-8260 for replies.

If there is a problem with the copy, please contact Bettye Taylor (713) 676-7868

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Brown & Root, Inc.

Post Office Box 3
Houston, TX 77001-0003

January 12, 1995

Mr. Kirk H. Edelman
The Bank of Tokyo Trust Company
1251 Avenue of the Americas
New York, New York 10116-3138

Re: Panda-Kathleen L.P.
Draft Independent Engineering Report

Dear Kirk,

Attached you will find a draft technical review of the above referenced facility performed by Brown & Root, Inc. ("Brown & Root"). In accordance with Brown & Root's Scope of Services, as detailed in the contract for this engagement, Brown & Root has evaluated all documentation made available for review to date. Brown & Root's preliminary findings relative to this engagement comprise the majority of this report. This draft report does not necessarily constitute Brown & Root's final opinions. Information received after Wednesday, January 11 was not reviewed and therefore not incorporated into this draft report. We anticipate revisions and updates to the enclosed draft report.

The information contained herein is not meant to imply that every possible design problem or condition of existing equipment has been identified, or that no other problems exist. This draft report is issued subject to the terms and conditions set forth in the agreement between The Bank of Tokyo Trust Company and Brown & Root, including the limitations on the liability of Brown & Root contained therein.

We trust that you will find this draft report to be informative and helpful in gaining a greater understanding of the technical issues involved. We are available to discuss this draft report with you.

Sincerely,

Robert L. Cate, P.E.
Project Manager
Brown & Root Power

Sincerely,

N. Clay Jones
Project Consultant
Engineering Consulting Services

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TECHNICAL REVIEW

of

Panda-Kathleen Limited Partnership
115 MW Cogeneration Facility

Lakeland, Florida

prepared for

THE BANK OF TOKYO TRUST COMPANY

January, 1995

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PANDA-KATHLEEN COGENERATION

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1.0 EXECUTIVE SUMMARY

1.1 Overview

Brown & Root has completed on behalf of the Bank of Tokyo Trust Company ("BOT") a "due diligence" review of documents related to the Panda-Kathleen Cogeneration Project submitted by Panda Energy Corporation ("Panda Energy") and BOT. The Panda-Kathleen Cogeneration Project is a nominally rated 115 megawatt (110 MW guaranteed net output) cogeneration facility and 60,000 GPD distilled water facility that will be located in Polk County near Lakeland, Florida. The facility, to be owned by Panda-Kathleen L.P., a Delaware limited partnership, will derive revenue primarily from the sale of electrical capacity and energy to Florida Power Corporation with a secondary revenue stream from the sale of distilled water to other third parties (to be identified).

Substantial completion of the facility is scheduled for July 1, 1996.

1.2 Performance

Based upon the documentation reviewed, the facility should be technically capable of generating electrical power as required to satisfy the Power Purchase Agreement. Brown & Root found no "fatal flaws" in the technical specifications, systems and equipment described. Although the cogeneration facility is generally well defined, some additional considerations particularly related to availability/reliability have been recommended in this report.

Contractual provisions for performance testing and liquidated damages associated with the cogeneration facility are in accordance with industry practices. Specific provisions for performance testing and liquidated damages associated with the distilled water facility were not defined. This is considered significant only from the effect that the distilled water facility reliability has on the operation of the cogeneration facility. The cogeneration facility is permitted to operate as a "zero discharge" facility. All water effluent is handed by the distilled water facility.

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1.3 Project Cost/Schedule

The EPC Contract Guaranteed Maximum Price of $63.5 MM appears to be very competitive. As would be expected in this point in the project, the detailed design has not progressed to the extent as to preclude Change Orders. If prudently controlled by the Owner, these Change Orders should represent only

a relatively small increase in the Guaranteed Maximum Price. It is currently unclear from the documents reviewed as to the parties ultimately responsible for payment of price adjustments.

The sixteen (16)-month schedule from time of financial closing (assumed to be no later than March 1, 1995) to Guaranteed Substantial Completion on July 1, 1996, is very aggressive but in our opinion achievable. Schedule risks appear to be mitigated by the Contractor having already performed some engineering at risk, preselection of major equipment, and six (6 months of project "float" until the Power Purchase Agreement "sunset" date of January 1, 1997, before which the facility must be fully operational. It is expected that the Contractor will be required to accelerate work schedules and equipment deliveries in order to meet the target dates.

1.4 Operating Cost, Budget, Pro Forma

The Operation and Maintenance Agreement submitted to Brown & Root for review appears to be in accordance with industry standards and supportive of the long term facility operational objectives. The O&M contract cost information had not yet been entered in the draft submitted, so it can only be presumed that the final negotiated contract amounts will support the O&M costs presented in the Pro Formas. Based on Brown & Root's experience, the O&M costs presented in the Pro Formas appear reasonable.

There appear to be two technical errors in the implementation of the performance data (output and heat rate) in the pro forma. These items are performance degradation and heat rate and its conversion into fuel consumption and cost. This is discussed in detail in Section 9.2. These items should be reviewed and adjusted as necessary, since they both directly relate to project profitability.

1.5 Permits

The permitting process appears to be progressing well with reasonable constraints being placed upon the facility. Permits for air, water use, industrial wastewater treatment system, management and storage of surface waters, and construction of the natural gas pipeline have either been issued or are pending. A conditional site approval has been received from the Polk County Board of Commissioners; and a "Certificate of Concurrency Determination" was issued certifying that adequate transportation, solid waste, drainage, parks, water, and sewer facilities are available. Phase I Environmental Assessment Reports have been prepared for the cogeneration site and the natural gas pipeline

Although some issues must be addressed during detailed design of the facility, it is Brown & Root's opinion that no major obstacles to obtaining the necessary construction and operating permits have been identified in the documents reviewed.

1.6 Contracts

The EPC and O&M Agreements appear to be commercially and technically in accordance with industry standards. Minor considerations have been presented by Brown & Root in this report.

It is Brown & Root's opinion that significant discrepancies exist among the Standard Offer Contract. Gas Purchase Contract, and the Pro Formas primarily regarding tenures. The Pro Formas are based upon a 25 year loan term, whereas the tenure for the Gas Purchase Contract is through May 31, 2016 with a three (3) - year evergreen provision, and the PPA provides defined pricing provisions only through contract year 2016. There is also no provision in the PPA that guarantees the facility will receive capacity payments prior to January 1, 1997.

The Gas Purchase Contract provides for only a portion of the fuel required by the facility, with the balance presumably to be provided through "spot" market purchases. These purchases are normally interruptable by the supplier, which could leave the facility without fuel for periods of time.

These contractual issues have already been identified and will hopefully be immediately resolved.

1.7 Conclusions

In Brown & Root's opinion, the following conclusions can be drawn from the documentation presented:

- Contractual discrepancy issues as discussed above are the only major concerns identified, and adequate responses should be obtained prior to financial closing.
- The facility as described should be capable of performing as required by the Contracts
- Environmental permitting is apparently progressing well and should not impact project viability or economics.

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- The project schedule is aggressive but achievable based upon financial closing no later than March 1, 1995.

- The EPC Contract Guaranteed Maximum Price is competitive but vulnerable to Change Orders. Change Orders can and must be controlled by the Owner.
- The Pro Forma should be adjusted to reflect the effects of normal equipment performance degradation.

- The O&M Agreement appears to be in accordance with industry standards and long term operational objectives of the facility; however, final negotiated contract amounts must support the Pro Formas (or vice versa).

- Performance testing and liquidated damages provided in the EPC Contract for the cogeneration facility are in accordance with industry standards and should protect the Lenders' interests.

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2.0 DESCRIPTION OF FACILITIES DRAFT

2.1 Project Description

The Panda-Kathleen Cogeneration Project is a nominally rated 115 megawatt (110 MW guaranteed net output) natural gas/fuel oil-fired, combined cycle cogeneration plant and distilled water facility. The facility will be located in Polk County on a 7.5 acre site in an industrial park adjacent to US highway 92 west of Lakeland, Florida. Kathleen will supply electrical power to Florida Power Corporation under a 30 year power purchase agreement, and provide thermal energy to a steam host, which is a distilled water plant to be owned by a subsidiary of Panda Energy Corporation. Output from the distilled water plant will be sold under contract to a third party. The cogeneration facility has received certification from the Federal Energy Regulatory Commission as a Qualifying Facility (QF).

The cogeneration facility incorporates a single-train, dual-fuel combustion turbine, ABB Model GT11N1, with "dry low NOx" combustors, an unfired heat recovery steam generator producing approximately 275,000 lbs/hr high pressure steam to the steam turbine and a minimum of 19,100 lbs/hr low pressure process steam, and an ABB "VAX" axial exhaust condensing steam turbine with associated condenser. A cooling tower will supply circulating water to the condenser and closed cooling water system. Natural gas will be the primary fuel for the combustion turbine with No. 2 fuel oil as backup. Electrical power generated will be 13,800 V, 3 Ph, 60 Hz.

The facility will be designed as a "zero discharge" installation which produces distilled water by evaporating approximately 73,400 GPD of effluent from the cogeneration systems.

2.2 Key Project Participants

Panda Energy Corporation is the Sponsor of the Panda-Kathleen Cogeneration Project. Panda-Kathleen L.P. (PKLP) will own and be responsible for operation of the facility. Services will be provided to PKLP by the following entities (see attached Organizational Chart):

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- Walsh-Gilbert Commonwealth (joint venture) - EPC Service
- Calpine - O&M Contractor
- Lakeland Water Co. (subsidiary of Panda) - Steam Host (distilled water producer)
- Associated Natural Gas (ANG) (Parent of Associated Gas Services, Inc.) - Proposed Natural Gas Supplier

• Florida Gas Transmission	- Proposed Gas Transportation
• City of Lakeland	- Prearranged Gas Capacity Release, and Electrical Interconnection between PKLP and Florida Power Corporation
• Florida Power Corporation	- Purchaser of Electrical Energy and Capacity
• Universal Ensco	- Pipeline Engineering

3.0 POWER AGREEMENTS DRAFT

3.1 Electric Power Sales

PKLP will sell electric power to Florida Power Corporation (FPC) under a Standard Offer Contract between Panda-Kathleen L.P. and Florida Power Corporation, effective September 20, 1994, and executed November 25, 1991; as amended by Letter Agreement dated April 29, 1993, between Florida Power Corporation and Panda-Kathleen L.P. The primary term of the agreement extends from January 1, 1997, through March 31, 2025.

Under the terms of the agreement, as amended, PKLP will be paid for 74.9 MW of electrical capacity at a rate which escalate from $5.79/kW/month in 1997 to $14.90/kW/month in 2016. PKLP is required to reestablish its ability to deliver the contract capacity in two ways: First, by its performance over the course of any contract year; and second, if requested to do so by FPC. The capacity payment will be reduced if PKLP fails to demonstrate its ability to deliver the contract capacity. At no time can the contract capacity exceed 75 MW.

PKLP will sell (up to 115 MW) of electric energy under the same agreement. The rate at which PKLP will be paid for electric energy will be set on an hour by hour basis by FPC's "As-Available energy rates". If FPC chooses to ask (dispatch) PKLP for energy, the rate will be those rates included in the Standard Offer Contract. It is expected that this scenario will occur less than 5% of the time in the early years of the project. At other times, PKLP can self-dispatch electric energy to FPC and receive the As-Available rate. Due to the variability of this rate, PKLP commissioned ICF Resources to undertake an "Independent Assessment of Florida Power Corporation's As-Available Rate." ICF's thorough analysis predicted the on-peak and off-peak rates over the term of the agreement, and confirmed that there are times, possibly during each day, when it will not be economically attractive to operate the facility. For this reason, PKLP assumed that the facility will operate for only 6,500 hours the first year (74%), cycling on and off as economics dictate. When the facility does operate, the probable operating level will be full load.

(Note: The pricing comments assume Panda and FPC fill in the pricing gap after the year 2016. Also, Brown & Root assumes Panda and FPC have agreed that Panda can produce and sell 115 MW under the Standard Offer Contract. No maximum amount or ceiling is stated in the contract. Panda and FPC must clarify that energy and capacity payments will start when the facility achieves Commercial In-Service status, not necessarily January 1, 1997 as amended.)

There are also references in the Standard Offer Contract to "emissions credits or debits." Due to the high thermal efficiency of this combined cycle facility, and the low emission rate of the ABB combustion turbine, PKLP may receive benefit from its ability to displace electric power generated by sources with higher emissions rates.

There are several minor points which should be clarified:

- In Paragraph 8.6.1, there is a reference to a "value of deferral payment option" which affects the value of the Capacity Account, which is, in turn, owed by Panda to FPC. We could find no definition of this option.
- In Paragraph 10.2, the "normal value of deferral payments" is unclear and undefined.
- In Paragraph 10.3, the "value of emission credits or debits" is undefined.

3.2 Electric Power Transmission

Electric power from the facility will be delivered to FPC via an electrical interconnection between PKLP and the City of Lakeland. Terms of this arrangement are included in the Draft Transmission Interconnection Agreement between Panda-Kathleen L.P. and the City of Lakeland. In general, this agreement serves the intended purpose; however, there are several minor points which should be clarified.

- Section 5.1 - Firm transmission service for 115,000 kW @ 69 kV conflicts with Appendix C in the agreement which indicated capacity reserved as 74,900 kW. Further, there are times when the facility can deliver power in excess of 115,000 KW. Lakeland's desire and ability to transmit the additional power is unclear.
- Section 5.4 - CHARGES FOR TRANSMISSION LOSSES, the second paragraph and the last paragraph are identical.
- Panda will be paid for power generated during start-up and testing at Lakeland's as-available energy rate. We assume that Lakeland's system can accept 115,000 KW of electric power during the testing periods.
- Section 6.2 - REACTIVE KVA, Lakeland anticipates that Panda will operate at unity (1.0) power factor. There is no language describing Lakeland's position if Panda operates at less than a unity power factor.

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4.0 FUEL AGREEMENTS

4.1 Gas Supply

The primary supply of natural gas to fuel the facility will be supplied under a Gas Purchase Contract between Panda-Kathleen L.P. and Associated Gas Services, Inc. (AGSI). (At the time of this review, the agreement was in draft form only.) AGSI will provide firm volumes of up to 20,000 MMBtu/d for a primary term extending from June 1, 1996, through May 31, 2016. AGSI will additionally provide fuel management services for the dispatching of gas supply and transportation, the purchase and transportation of additional quantities of gas as requested by PKLP, the purchase and delivery of fuel oil as backup fuel, and the sale of gas supply and transportation rights committed to PKLP but not required for operation on a day-to-day, or even hour-by-hour, basis. The price of the gas will be the "spot" price as established by a formula involving published spot prices, plus a small premium. (The spot price relates to interruptible sales agreements for short terms, usually thirty (30) days or one month.)

In Brown & Root's opinion, the pricing structure seems very favorable to PKLP. PKLP gets a lot of value and a lot of flexibility for a twenty (20) - year commitment of gas backed by a parent guarantee for only a few pennies per MMBtu above the spot price.

PKLP is very well protected against under deliveries, referred to as Deficiency Quantities. AGSI is liable for replacement gas cost, administrative costs (unspecified), increased transportation fees, and reduced revenues due to PKLP's inability to generate electricity for sale. The full extent of the damages due to PKLP are a little unclear in that AGSI also has the obligation to manage the delivery of gas and backup fuel oil to the facility. It is unclear what mechanism PKLP would utilize to obtain alternate fuel supplies when AGSI is charged with this responsibility.

We assume Panda will reconcile the fact that the gas contract tenure (20 years) is shorter than the loan tenure (25 years) as proposed. We further assume that the volume discrepancies will be adequately addressed. At 100% load, the facility can use up to 22,800 MMBtu/d. As earlier stated, the Gas Purchase Contract provides firm volumes up to 20,000 MMBtu/d. Extended periods at full loads can exceed the supply contract agreement.

There are also several minor points which should be clarified:

- The Capacity Release Fee is unspecified
- The Discount Fee is unspecified
- The Fuel Oil Management Fee is unspecified

4.2 Gas Transportation

Natural gas will be delivered to the facility from a nearby FGT pipeline. This is expected to be a high pressure (900+ psig) pipeline, and supply pressure is not expected to be a problem. However, it is customary for the gas transportation contract to specify a minimum delivered gas pressure, this would be on the order of 400 psig for this facility. It would be beneficial to have this spelled out in the gas transportation agreement.

PKLP has a number of draft agreements in process (see list below), and one executed agreement, which, in sum are designed to provide the firm transportation of gas to the facility from designated points of supply. At this time it appears that, if successfully concluded, the firm transportation that PKLP requires will be in place. Brown & Root notes, however, that the completion of these agreements should be a priority for PKLP at this time. Assuming firm transportation is available, the cost of this transportation is significant, and as such, plays a role in the overall profitability of the facility.

The agreements reviewed to date include:

- December 6, 1994 draft Letter Agreement regarding Proposed Permanent Prearranged Capacity Release Agreement between the City of Lakeland and Panda-Kathleen L.P.
- December 6, 1994 draft Capacity Relinquishment Agreement between Panda-Kathleen L.P. as "Acquiring Shipper", and the City of Lakeland, as "Relinquishing Shipper".
- Draft Firm Transportation Service Agreement, Rate Schedule FTS-1, between Florida Gas Transmission Company and Panda-Kathleen L.P.
- Draft Firm Transportation Service Agreement, Rate Schedule FTS-2, between Florida Gas Transmission Company and Panda-Kathleen L.P.*

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- June 7, 1994 draft Letter Agreement regarding "Proposed Permanent Capacity Release Agreement Between Florida Gas Utility and Panda-Kathleen L.P.; Proposed Mutual Termination and Release of Liability Between Florida Gas Transmission Company and Panda-Kathleen L.P."

- Draft Transmission and Release Agreement between Panda-Kathleen L.P. and Florida Gas Transmission Company.

- Executed Letter Agreement dated November 8, 1994, between Florida Gas Transmission Company and Panda-Kathleen L.P. for the construction and reimbursement of Panda-Kathleen L.P. delivery point.

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5.0 ENGINEERING/TECHNICAL REVIEW

The basic thermal cycle for PKLP is based on an ABB 11N1 Gas Turbine/Generator (GTG) in single-shaft, combined cycle cogeneration configuration. A two pressure, unfired Heat Recovery Steam Generator (HRSG) is provided to generate steam from the exhaust heat of the GTG. The steam is used for process and/or sent to the Steam Turbine/Generator (STG) to generate additional electric power. The cycle is typical of most combined cycle plants. In Brown & Root's opinion the equipment and configuration selected are suitable for the service intended and the facility should provide many years of reliable operation. No unusual operating problems are foreseen over the expected operating range of the equipment.

Several ABB heat balance diagrams were sent for review. These included 95°F, 59°F, and 20°F ambient cases on both natural gas and #2 fuel oil, or six (6) total. These indicate that the gross output of the facility varies from 114 MW at 95°F on gas to 133 MW at 20°F on oil. There is also a hand-drawn (not ABB verified) heat balance diagram at 72°F, the nominal annual average ambient temperature, in the QF application. This case indicates that the average net output of the facility is a nominal 115 MW. We note that none of the cases received specifically correspond to the summer and winter average cases that were used as the basis of the Pro Forma performance projections.

The EPC guarantee case is the 95°F gas-fired case mentioned above. The gross output at this point is 114.85 MW. The EPC guarantee is provided at 110.0 MW net based on 4.85 MW of auxiliary load. This auxiliary load represents 4.2% of the gross output of the facility. In Brown & Root's experience, units of this type normally would use 2.5% to 3.0% auxiliary load. Therefore, the EPC contractor should easily be able to meet the contract guarantee. With this extra margin, it is likely that the EPC contractor will qualify for some capacity bonus, as well. The same general comments also apply to the guaranteed heat rate.

It is our understanding the plan for this facility is to operate on a cyclic basis, starting and stopping the cogeneration equipment almost on a daily basis. From a technical perspective, combined cycle systems such as this one are capable of operating in this manner without harm to the equipment. O&M costs would be expected to be somewhat higher than for a unit operated continuously at base load, as discussed in Section 9 of this report.

Brown & Root has reviewed Exhibit F, Scope of Work, to the EPC Contract and find this document to be substantially complete as a general specification for a cogeneration system to be provided. In most areas, the Scope of Work provides appropriate equipment definition, redundancy requirements, materials of construction, and Codes and Standards which must be followed by the Contractor. It is recognized that further detail will evolve during the course of detailed engineering design.

Brown & Root offers the following comments to Exhibit F of the contract which we recommend be considered relative to Scope completeness and facility reliability.

5.1 Mechanical

1. Section 5.1.3 requires a water spray desuperheater. The desuperheater should be located between a primary and a secondary superheater to protect against water carry over to the steam turbine.

2. Section 7.5.1 requires plate and frame type heat exchangers for the closed cooling water system. The circulating water side of these exchangers will probably need a continuous self cleaning strainer or at least a fairly large duplex strainer. Most plate type heat exchangers have narrow passages and will not pass solids larger than 1 or 2 mm. This requires straining down to 10 to 20 mesh.

3. Section 8.1 describes the make-up water treatment system. There are no material requirements specified for the demineralized water tank, piping and valves, and pumps. Stainless steel for the pumps and piping would be necessary. There are three tanks called out in this section, and the only requirements are "bolted design epoxy painted". The demineralized water tank should be lined, welded seam construction. The appropriate Standard (AWWA for example) should be referenced.

4. Section 9.4, Distilled Water Plant/Zero Discharge System should include system availability/reliability guarantees along with the other performance guarantees. Section 9.4.4 statement that materials of construction "shall be suitable for the design conditions and intended service" leaves too much room for the Supplier's interpretation from a longevity and reliability point of view. The same comment applies to the requirement for a "guarantee against material corrosion and/or erosion."

5. Section 6.1.1.9.g specifies stainless steel lube oil pipe be used downstream of the oil filters as is normally required. Section 6.4.2.15.2, which specifies carbon steel lube oil pipe should probably be modified to agree.

6. Sections 6.7.1 and 9.5 refer to "bolted design epoxy painted" tanks, the same as Item 3. There needs to be a more complete description of tank requirements.

7. Section 6.3.5 references Paragraphs 6.9 through 6.11. These sections don't seem to exist.

8. Section 10.5 calls for a fuel oil unloading pump relief valve connection. There is no mention of an unloading pump anywhere in this section. Also, there is no connection listed for an overflow.

9. Section 12.12.2.4.8.2, It is recommended that oil heaters in outdoor oil reservoirs be provided to inhibit water condensation in the reservoir when the equipment is idle.

10. Section 16.3.1, Items 10 and 11 are fuel oil unloading area and fuel oil pump building. This equipment is not described elsewhere in the scope. Section 14.6.4 states that the fuel oil pumps will be located outdoors. This needs to be clarified.

5.2 Electrical

The following documents were reviewed in addition to the appropriate sections of the Scope of Work as the basis of this opinion:

Date	Title/Description
12/15/94	Transmission Interconnect Agreement
06/13/94	Prop. 69 kV Line
	Electrical One Line
	Lakeland Electric System Twenty-Year Plan
	Master Equipment/Load List

1. The City of Lakeland 69 kV transmission line which will carry the Panda-Kathleen power to FPC is shown on the city's twenty (20) year plan as "future". If the line does not yet exist, the schedule for the planning, acquisition of right of way, design and construction of this line should be reviewed. As sale of power from the plant is dependent on this line being in service, the city's commitment to its construction should be assessed and its progress should be monitored closely to meet the planned July, 1996 in-service date of the Panda-Kathleen plant..

   The design of the 69 kV interconnection for reliability from the standpoint of power export should be considered. As currently planned, the Panda-Kathleen plant connection to the Lakeland 69 kV system will form a three terminal line between the Sutton and Winston substations and the cogeneration plant. A total of three (3) circuit breakers will be required for this line with one located in each substation and one at the cogeneration plant. Although the length of this line is short (approximately 3.5 to 4 miles total) and the exposure to faults is therefore limited, this arrangement will impose a certain limitation upon the plant power export reliability. For

example, a lightning strike on any portion of this three terminal line will require tripping all three breakers, resulting in disconnection of Panda-Kathleen from the 69 kV system. Fast breaker reclosing cannot be allowed due to the possibility of damage to the generator from an out of phase connection. The usual scenario is for the utility to reconnect between its own substations first, and after a suitable time delay to "prove" a secure connection, the breaker at Panda-Kathleen can then be closed. A plant trip may occur during this time due to loss of load. If so, the plant will have to be restarted and reconnected with the 69 kV line and then ramped up to the desired output.

A more reliable arrangement would include two independent paths for power export from the plant to the buyer, FPC. This would provide the ability for the plant to remain on line and in synchronization with the utility system if one of these connections is momentarily opened such as can be expected during a storm. Automatic reclosing of a simple line segment (one containing no isolated generation) within a few seconds is a generally accepted practice. With this arrangement the two (2) connections can be maintained during normal operation and the likelihood of an interruption in power export is low. However, such an arrangement would require some additional capital expense and the cooperation of the City of Lakeland.

Careful consideration should be given to the design of the 69 kV interconnection and the intended operational procedures to be applied to it by City of Lakeland, including the following points:

- Protective Relaying Scheme
- Breaker Reclosing Scheme
- Three-way Switch Scheme at center of line
- Generator Synchronizing Scheme for 69 kV breakers, if applicable.

2. Electrical equipment ratings will for the most part be determined during detailed design. Some discrepancies exist in the data available for review. Referring to the one line diagram drawing EE-320-001, the ratings of the main and auxiliary transformers are identified as OA/FA class, but only the OA rating is shown. The main transformer is apparently to be rated 150/200 MVA and the auxiliary transformer 3750/4687 KVA. The transformer temperature rise above 30 degrees C average ambient should be stated (typically 55 or 65 degrees).

3. At 150/200 MVA the main transformer will be adequately rated to carry the maximum expected export power. The auxiliary transformer rating also appears adequately rated based on the Total House Service Load of 3905 KW shown on the Load List.

4. The value for house load is larger than the expected 2.5 to 3.0% of gross generator output and seems quite conservative. One reason for this may the assumption of 1.5% losses for the main transformer and 1.9% for the auxiliary transformer. Transformer losses should not normally exceed 0.5%. However, it is possible that isolated phase bus losses and other conductor losses are included in these figures since they are not listed separately.

5. The Master Equipment/Load List describes the main transformer as being of three winding configuration - It should be two winding type as shown on the one line.

6. The Master Equipment/Load List and the one line diagram disagree on the rating of the Startup/Standby Transformer. One says 2000 KVA, the other 2500 KVA.

7. No mention was found of the control scheme related to switching between the startup/standby transformer and the auxiliary transformer. Suitable safeguards must be employed to prevent out of phase switching between these two sources. Such conditions could damage equipment and endanger personnel. The presence of a generator breaker as shown on the one line diagram implies that the SU/SB transformer will be used infrequently.

8. Appendix J, page J-1, first paragraph identifies the NEC and ANSI as the criteria for protection. IEEE should be included. Page J-2, first paragraph, last sentence reads "The following short-circuit calculating standards shall be used where appropriate in the study" but no standards are listed thereafter. This sentence should probably be deleted in view of the above comment.

5.3 Civil

Our review of the Civil/Structural aspects of the planned power plant, at this stage, has revealed no apparent flaws with the proposed design. Only conceptual layouts and descriptions are available at this time, and design criteria presented are still rather general; however, based on a limited review of the materials currently available, Brown & Root believe the concepts, criteria and methods described reflect conventional engineering practice and normal power plant industry design. As to codes and standards that have been referenced, the South Florida Building Code should be added to the list, especially regarding wind loads.

Two areas that will have to be addressed in the final plant design include:

1. Additional geotechnical/geophysical investigations will be required to evaluate deep soil and rock conditions where subsurface caverns may exist at the site. The geotechnical report prepared by Alomo/Saxena Consultants, Inc., dated 2, September 1992, was for a proposed warehouse/distribution facility and not a cogeneration power plant. The power plant will include heavy static and vibration equipment loads which are settlement sensitive. Existing soil borings were only 6 feet deep (hand augered) and 25 feet deep (drilled).

2. Site grade elevation and drainage patterns will have to be adjusted to insure the plant area is above the 100-year flood plane. As indicated in Section 13.2 of the Scope of Work document, "Polk County is currently conducting a flood study of the creek basin and now considers the entire subject property to be below the 100-year flood stage." Results of this study need to be incorporated into the final plant design.

5.4 Instrumentation and Controls

1. Section 2.1, Codes and Regulations - ISA should be added to Mechanical. NFPA and SAMA (Scientific Apparatus Manufacturers Association) should be added to Electrical.

2. Section 2.3 should identify the party that is to prepare the "FLUE GAS CONTINUOUS EMISSIONS MONITORING PLAN" for the Owner/Operator to file with the USEPA prior to plant start-up.

3. Section 5.7.2, It is recommended that each oil lubricated journal bearings and thrust bearing on the feedwater pumps have bearing metal temperature detectors installed and monitored by the DCS. The temperature detectors may warn of impending conditions that might lead to bearing failures which could cause unscheduled outages and equipment damage.

4. Temperature transducers such as those specified in Sections 6.1.1.6.6.b, 6.1.1.9.i, 6.4.1.5.1.1, and 12.12.2.4.14 should be standardized to enhance design, construction and maintenance. ABB has quoted PT100 (Platinum 100 ohm RTDs) transducers for their equipment bearings.

5. There appears to be some contradiction among Sections 6.1.1.7.k, 6.2.5b, and 6.4..5.1.3 regarding location and method of mounting the STG vibration monitors. Section 5.7.2 does not address a location for the HRSG feedwater pumps' bearing vibration monitoring equipment. Proximity type vibration monitoring for all rotating equipment needs to be

coordinated. Bently-Nevada vibration monitoring instrumentation should be specified for the HRSG feedwater pumps bearings since that is the instrumentation which has been specified for the STG.

6. Sections 6.2.9.2 and 6.2.13 should agree regarding how the GTG start-up and supervisory control will be done, with the DCS or with the GTG control processor.

7. Section 6.4.1.5.1.1 should specify the requirement for generator cooling air heat exchanger air in and air out temperature sensing.

   Section 6.4.2.4.3 should read: Bearings and bearing/pedestal instrumentation shall be insulated where necessary to prevent the flow of "shaft currents".

8. Section 10.0 should be clarified to state how many high accuracy metering stations are required to be provided by the Contractor, one for each point of consumption or one serving all points of consumption.

9. Section 11.0, the I&C section: This section should describe the Main Control Room, the Control Room Panel(s) and the DCS Console. There should be a general panel description and general specification included in this section. There should be some discussion of the relationship between the Control Room Panel(s) and the DCS Console relative to plant operation and control. Alarm annunciation type circuits should be specified to open circuit for the alarm condition indication.

10. Section 11.2.3.5, the last paragraph should be modified to provide a definition of the spare DCS quantitative and functional I/O requirements that is clearly understood by both the Owner and the Contractor.

11. Section 11.3.7.3, the first sentence should be corrected to read: Tubular gauge glasses shall "not" be used for high pressure applications.

12. Section 11.3.12, Brown & Root recommends that copper tubing not be used on odorized natural gas instrumentation. Sulfur in the odorizer attacks the copper.

13. Section 11.4, Binary type logic diagrams should be added to describe sequential, interlocking and tripping operations.

14. Sections 14.6.6 and 17.13, Since proper operation of the Continous Emissions Monitoring System (CEMS) is essential to operation of the GTG, CEMS building air conditioning should be 100% redundant. The a/c units described are small and the CEMS analyzers are extremely temperature sensitive.

15. Section 17.6, The Continuous Emissions Monitoring Building should be pressurized with filtered conditioned air to provide the same type of environment provided for the Control Room.

16. Section 18.18, It is recommended that the CEMS be of the extractive flue gas type to provide a controlled environment for the gas analyzers and to minimize the risk of instrument damage should lightening strike the stack.

17. Section 19.5.1.1.3, The Contractor should be required to provide a guarantee that the CEMS will certify to USEPA and Florida Department of the Environment requirements. The CEMS vendor should be required to provide the initial supply, as a minimum, of EPA Protocol I calibration gas for the CEMS in sufficient blends and quantity for start-up, certification calibrations and initial operation.

5.5 Pipeline

5.5.1 Comments Related to the Confidential Memorandum

The Vicinity Map (Attachment 1) to the Construction and Reimbursement Agreement shows the pipeline meter station located on the FGT right-of-way. Locating the meter station at the proposed cogeneration plant site would eliminate the need (cost) for acquiring additional space adjacent to the right-of-way on which to build the meter station and any requirements for an access road.

As shown on the Vicinity Map, the proposed delivery pipeline apparently parallels the existing FGT St. Petersburg lateral line a distance of one mile before leaving the existing right-of-way and departing south towards the cogeneration plant. It appears that the tap into the existing FGT lateral line cannot be made at this departure point thus saving about one mile of pipe. A preliminary hydraulic analysis performed by Brown & Root indicates a six (6) inch pipeline will be adequate to transport 22.75 MMcfd, the approximate maximum summer flow rate.

6.0 ENVIRONMENTAL AND PERMITTING REVIEW

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6.1 Environmental Review

Brown & Root has reviewed information provided on the project scope, environmental permits, Phase I environmental assessment reports for the cogeneration plant site and the natural gas pipeline route, and local zoning/planning/site approval. The permitting processes for the proposed facility and natural gas pipeline are nearly complete. Acceptable permits have been negotiated and public notices have been published. Comments are provided on the permits and the permit status as well as local planning approvals and the status of these approvals. Brown & Root has minor concerns related to Continuous Emission Monitoring System (CEMS) requirements, Title V Federal Operating Permit requirements, Title IV Acid Rain Program requirements, water use, historical & archaeological issues, gopher tortoise relocation, and noise issues. Environmental issues associated with the transmission line to be provided by the City of Lakeland should be reviewed as soon as information becomes available.

6.2 Environmental Permits

6.2.1 Air Permits

The State of Florida Department of Environmental Protection (DEP) issued a Notice of Intent to Issue an air permit for the Panda-Kathleen 115 MW Cogeneration Facility on October 11, 1994. The required public notice was published on October 21, 1994 to initiate a 30-day public comment period. A Notice of Permit and the final permit are expected shortly.

The proposed combination state and federal Prevention of Significant Deterioration (PSD) air permit is based on the June 6, 1994 air permit application and a September 19, 1994 letter with attachments. Representations made in the air permit application and the September letter and attachments are by reference part of the permit. Any unauthorized deviation from the approved drawings or exhibits could constitute grounds for revocation of the permit or enforcement action by the DEP. The final plant design and operation should be consistent with the air permit and the associated air permit application and modifying letter with attachments. A copy of the air permit application and modifying letter with attachments for review and for future comparison with the final plant design and operation should be provided for review by Brown & Root.

Customary General Conditions are included as part of the air permit. Specific Conditions included in the air permit limit back-up fuel oil firing to the equivalent of 500 hours per year of full load operation and limit fuel oil sulfur content to 0.05%. Emission limitations in lbs/hr are favorably based on blocked 24-hour averages (midnight to midnight). The NO_x emission limit of 15 ppmvd may be adjusted per Specific Condition B.5 to less than 15 ppmvd (20% over the demonstrated concentration rounded to the next higher number) if a required (Specific Condition B.4) engineering report demonstrates that lower NO_x levels have been achieved.

Monitoring requirements stated in Specific Condition D require a continuous emission monitoring system (CEMS) for NO_x and, if necessary, for a diluent gas (CO_2 or O_2). We note that the proposed Scope of Work section 18.18 states that the facility shall have monitors for opacity, NO_x, SO_x, CO, and O_2. SOx, CO and opacity monitors are not required by the air permit or existing regulation. We note that section 18.18 does not specifically state requirements for the data acquisition system. The draft permit notes that "the Federal Acid Rain Program requirements of 40 CFR 75 shall apply if those requirements become effective for this source/emission unit." The applicability of the Acid Rain Program and 40 CFR 75 should be established so the CEMS design and reporting requirements can be finalized and reported to the DEP's Bureau of Air Regulation as required by Special Condition E.3.b.

In general, the General Conditions, Specific Conditions, and the Best Available Control Technology (BACT) Determination prepared for this combination state and federal PSD permit provide a favorable basis for the construction and the operation of the Panda-Kathleen facility.

The Panda-Kathleen facility will be required to obtain a Federal Operating Permit per the Title V requirements of the Clean Air Act Amendments (CAAA) of 1990 and the State of Florida State Implementation Plan. An annual fee of approximately $25 per ton of pollutants is charged to fund this permit program. This would equate to $10,300/year based upon the permitted total pollutant emission limitations of 412 tons/year (TPY). Brown & Root believes the Panda-Kathleen facility is a new "affected" utility unit that is subject to the permitting and other requirements of the CAAA Title IV Acid Rain Program. The Title IV permit and compliance plan requirements would be handled as part of the comprehensive Title V permitting process. In addition to the annual fee for this permit, SO_x allowances would have to be purchased for approximately $2,500 per ton for the small amount of SO_x emissions coming from this facility and the CEMS provided would have to satisfy the equipment, certification testing, quality assurance, and reporting requirements of 40 CFR 75. This would equate to $60,000 based upon the total permitted SO_2 emission limitation of 24 TPY. In Brown & Root's

opinion, there should not be any problem obtaining the Federal Operating Permit or the SO_X allowances when required.

Although relatively small amounts, it is assumed that Panda has considered these environmental fees in the Pro Forma costs.

6.2.2 Water Use Permit

The water use permit was issued on October 31, 1994 by the Southwest Florida Water Management District.

The permit notes that the proposed project is in the Southern Water Use Caution Area. The permit transmittal letter notes "that the Governing Board has formulated a water shortage plan as referenced in Condition 4 of the Standard Water Use Permit Conditions (Exhibit A), and will implement such a plan during periods of water shortage." It is possible that during the life of this project water use could be restricted or suspended during a declared water shortage. It is most likely, however, that water use would only be restricted. Reclaimable water resources are available in the project area that may be suitable for cooling tower make-up. We note that Special Condition 2 requires the permittee to investigate the feasibility of using reclaimed water as a water source and to submit a report describing the feasibility to the Permits Data Section by July 1, 1999. Water shortages tend to develop during the April to May and the October to December periods. Water is not currently a problem in Polk County because of recent heavy rainfalls. Water shortages can develop when periods of below normal rainfall fail to recharge the local aquifers. In Brown & Root's opinon, this appears to be a manageable risk.

6.2.3 Industrial Wastewater Treatment System Permit

The Florida DEP issued a draft permit and a Notice of Intent to Issue a permit for construction of the Panda-Kathleen Cogeneration Facility and the associated zero discharge water treatment system on October 19, 1994. A public notice was published on November 10, 1994. A 14-day period is allowed for petitions to challenge the permit. The Florida DEP issued a Notice of Permit and issued the permit on December 6, 1994. Any party to this permit has a right to seek judicial review of the permit by filing a Notice of Appeal within thirty days of the Notice of Permit. Brown & Root does not know if any appeals have been filed.

We note the permit states the capacity of the facility as 110 MW while the air permit and other project documents state the facility's capacity as 115 MW.

The permit's Specific Condition 3 notes that "If historical or archaeological artifacts, such as Indian Canoes, are discovered at any time within the project site, the permittee shall immediately notify the District Office and the Bureau of Historic Preservation..." While the risk may be small it is recommended that an historical and archaeological survey of the cogeneration facility site and the natural gas pipeline route be performed to ensure problems do not develop latter that could impact the project's schedule.

Specific Condition 5 requires that the permittee ensure that construction of the facility is as described in the application and supporting documents unless proposed and approved prior to implementation. Major changes could result in a reapplication being required. A copy of the industrial wastewater treatment system application and any supporting documents should be provided to Brown & Root for review and for establishing a basis for evaluating the final system design and operation.

Specific Condition 30 requires the permittee to submit an application to operate the industrial wastewater treatment facility. This requirement is not considered a problem and is only noted to completely identify all permits required to operate the facility.

6.2.4 Management and Storage of Surface Waters - General Construction Permit

This permit was issued on August 26, 1994 based on an application submitted July 1,1994. The permit abstract references a 110 MW cogeneration facility. Specific Condition 3 addresses historical and archaeological artifacts in a manner similar to the Industrial Wastewater Treatment System Permit's Specific Condition 3.

Specific Condition 8 prohibits construction "within the project area for any facilities or activities associated with or directly relating to the surface water management facilities until such time as the permittee has obtained ownership or control of those areas necessary for the surface water management system, including all rights-of-way, easement locations, upland conservation buffer areas and wetlands." We have requested a copy of the Surface Water Management General Construction Permit Application and the construction plans submitted August 5, 1994 for review, for future reference, and for determining the status of land needed to construct the surface water management system.

The Specific Conditions, Limiting Conditions, and Standard Conditions contained in the permit appear to be reasonable and customary.

6.2.5 Construction Permit for Pipeline to Cogeneration Facility

In response to the Joint Application for Works in the Waters of Florida for Panda-Kathleen, L.P. Panda-Kathleen Cogeneration Facility and Natural Gas Pipeline Project dated September 2, 1994, the Corps of Engineers issued a permit that is valid for two (2) years authorizing installation of the natural gas pipeline on September 16, 1994. The Florida DEP conducted a field review of the project on November 10 and issued a Notice of Intent to Issue a permit on November 22, 1994. A public notice is required. We are investigating to determine if the notice has been published. A 14-day public comment period is required.

General Conditions and Specific Conditions have been provided with the State permit. Specific Condition 2 addresses historical and archaeological artifacts in a manner similar to the Industrial Wastewater Treatement System Permit's Specific Condition 3 and the Management and Storage of Surface Waters - General Construction Permit Specific Condition 3.

Specific Condition 11 requires that "the permittee submit to the Department a Gopher Tortoise relocation plan approved by the Florida Game and Freshwater Fish Commission (FGFWFC) prior to initiation of construction." The joint application had noted the presence of a small number of gopher tortoise burrows and had proposed coordinating the relocation with the local FGFWFC Lakeland area office. A FGFWFC permit is required and the application can not be submitted any sooner than two months prior to construction. Coordination is in progress and no problems are anticipated.

6.2.6 Stormwater Pollution Prevention

A Notice of Intent (NOI) for the cogeneration site will need to be filed before construction starts to satisfy National Pollutant Discharge Elimination System (NPDES) requirements for stormwater discharges during construction. An additional NPDES NOI will need to be submitted before operation begins at the cogeneration site for stormwater discharge associated with an industrial activity. A Stormwater Pollution Prevention Plan (SPPP) and a Spill Prevention, Control, and Countermeasure (SPCC) plan will need to be prepared, submitted, and maintained on the site.

6.3 Polk County Zoning & Planning Approvals

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6.3.1 Certificate of Concurrency

An application for concurrency review was submitted on August 8, 1994. A Certificate of Concurrency Determination was issued on September 9, 1994, to certify that adequate transportation, solid waste, drainage, parks, water, and sewer facilities were available.

6.3.2 Site Approval

In response to Panda-Kathleen's July 29, 1994, Application for Non-Certified Electric Power Generating Facility Site Approval, the Polk County Board of Commissioners issued Site Approval for a Non-Certified Electric Generating Facility on October 25, 1994. The Board's approval was subject to ten (10) conditions. The project is required to undergo a commercial site plan review. Fuel oil use beyond that initially permitted by the Florida DEP in the air permit would require an application for and approval of modifications and copies of permits, data, and records associated with the facility. Compliance with "Polk County Flood Protection and Surface Management Code", Ordinance 88-04 (as amended) is required in Condition 8.

Condition 9 requires that "prior to commencement of operation of the facility, the applicant shall submit to Polk County Development Services Division a copy of their existing background noise level study," as referred to in their Response 19 (d) to the Impact Review by County staff. Brown & Root requests a copy of the Applications Appendix G - Impact Assessment Statement and a copy of the county's questions and Panda-Kathleen's responses to the Impact Review for review to evaluate any representations made regarding noise and other environmental issues. Noise appears to be an issue of concern to Polk County. The project's Scope of Work Section 20.5 makes the Contractor responsible for all noise abatement and states "the noise levels for the plant shall not exceed 80 dBA weighted sound level at any property line. The noise levels shall be calculated using the actual noise levels measured and subtracting the ambient noise levels measured previously". An 80 dBA sound pressure level is a relatively high level. Additional noise abatement may be required depending on the nature and location of critical receptors. Brown & Root notes a motel complex is located to the south of the cogeneration site.

Condition 10 allows County staff to terminate disposal of crystalizer solids in Polk County landfills if it is determined that the crystalizer solids do not allow the landfill leachate collection system to function properly. In the unlikely event this becomes a problem, alternative solid waste disposal options could be investigated and could be used. This could impact disposal costs, but with

only 1,400 pounds per day of crystalizer solids for disposal, this should have virtually no impact on overall project costs.

6.4 Phase 1 Environmental Site Assessments

A Phase I Environmental Assessment Report has been prepared for the cogeneration site. A small amount of solid waste and debris was noted during a site inspection on the previously undeveloped cogeneration site. No discharges, surface staining, or abandoned containers were observed on the 7.5 acre cogeneration site. The results of the Hazardous Materials Survey was noted as follows: "Although visual observation of the property was limited by dense vegetation, no hazardous materials were seen on the property. The presence of abandoned containers or electrical transformers was not detected on the property." A regulatory database review was performed for the 0.5 mile radius around the site. The cogeneration site property did not appear on any of the databases. Environmental problems noted for adjacent properties are not expected to have any impact on the cogeneration site. Standard qualifications and disclaimers were stated.

A Phase I Environmental Assessment Report was prepared for the natural gas pipeline corridor. The report summary and conclusions state that "Inspection of the corridor properties revealed only a small amount of solid waste, one abandoned container, a waste oil storage tank, and a few waste oil containers. No discharges or surface staining was noted." A regulatory database review was performed for a 0.5 mile distance around the pipeline corridor. The corridor properties did not appear on any of the databases. The same environmental problems for adjacent properties noted in the cogeneration site review were identified in this review. Standard qualifications and disclaimers were stated in the report.

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7.0 SCHEDULE REVIEW

Brown & Root reviewed the provided EPC schedule for the project, Exhibit A -- 1 of 1 of the EPC Contract. The review is intended to examine the overall validity of the schedule and comment on any potential problem areas.

The EPC schedule is accelerated and is targeting a substantial completion six (6) months earlier than the PPA "sunset" date of January 1, 1997. This is accomplished by accelerating the overall schedule and major milestones. The accelerated milestones are listed below:

	Contract Date	Target Date	Acceleration
Mobilize on Site	Sep. 1, 1995	Mar. 1, 1995	6 Months
Major Equipment on Site	Jan. 1, 1996	Oct. 15, 1995	2-1/2 Months
Hydro HRSG	Jun. 1, 1996	Jan. 1, 1995	5 Months
Substantial Completion	Jul. 1, 1996	Jun. 1, 1996	1 Month

Engineering

The total engineering duration for the project shown on the schedule is approximately nine (9) months. We opine that a typical engineering duration for this type of project will be a 12 - 13 month effort. Apparently some preliminary engineering effort by Gilbert has been under way for some time. Brown & Root was not able to determine how much engineering has been done to date at risk. The remaining nine (9) months could complete the engineering with some acceleration.

The major vendor selection is complete and vendor engineering is indicated to be in process. The balance of plant equipment vendors apparently have been selected as the purchase orders are scheduled to be released for manufacturing at financial closing. The receipt of information from the major equipment vendors is very important so the facility engineering can fully start. The power island equipment foundations are scheduled to complete design in mid-December, 1995. This will allow time to purchase the bulk materials required for the concrete construction. At notice to proceed, the facility design will have started five (5) months prior to construction mobilization. Brown & Root's evaluation is the engineering could be as much as 40-45% complete at this time, dependent upon the amount of "at risk" work. Considering the type of facility, this should provide sufficient information for construction to proceed without delays.

Equipment Procurement / Deliveries

Review of the equipment delivery durations indicates that most are in-line with normal expectations. The durations required from start of vendor information to the delivery on site were compared to typical fabrication lead times for this type of facility. Some the major equipment acquisition times are:

	Typical	Panda - Kathleen
Large Transformers	12 months	6-1/2 months
Steam Turbine	12 months	12 months
Gas Turbine	12 months	12 months
HRSG	10 months	10-1/2 months

The power block equipment purchase orders were scheduled to be issued for manufacturing in mid February, two (2) weeks before the completion of the proposed March 1 financial closing. The vendors were scheduled to start their engineering and providing of information four and one-half months prior to this. The turbine manufacturer could accelerate the equipment delivery with selection of "In production machines." This acceleration could possibly require the vendor to release material for forging or casting prior to financial closing at their own risk. Brown & Root would have to review the vendor proposal information to confirm.

The generator transformer delivery appears to be aggressive at 6 1/2 months , but could be achievable. Additional information concerning the purchase order details would be required to evaluate.

Construction

The construction strategy for this project is currently for Walsh to have a construction management team at the site. Walsh currently plans to self-perform some of the work, probably less than 50%. The remaning work will be subcontracted probably from major construction firms in the southeast. Construction firms have been contacted for subcontracting services during the estimate phase. Subcontracting philosophy is expected to be on merit shop basis.

Brown & Root reviewed the manpower requirements for the project. It is expected that approximately 250,000 work hours be required to complete the works over a fifteen (15) month construction period. Peak construction manpower should be approximately 200 people. In our opinion, labor availablility in the area is currently adequate. Walsh plans to have an adequate management staff at the site to support construction. Gilbert Commonwealth plans to have at least two (2) people to perform resident engineering functions at the site.

Brown & Root believes the the Walsh/Gilbert Commonwealth joint venture has a good plan which meets industry standard for construction services to build the project. Walsh and Guy F. Atkinson have the necessary construction resources (staff, labor, construction equipment, tools, etc.) to support the project.

The construction duration from mobilization to substantial completion appears to be achievable. The duration is fifteen (15) months compared to a typical of eighteen (18) months for this type of facility. The acceleration is evident in the erection of some of the major pieces of equipment. A comparison is below:

	Typical	Panda
Gas Turbine	5 months	3-1/2 months
Steam Turbine	4 months	3 months
HRSG	5 months	2 months

The erection timing of these pieces of equipment within the schedule could allow for an increase of duration and not impact the overall project schedule.

Conclusion

The development of an accelerated target schedule is prudent to allow a contingency for unexpected delays. The engineering effort is in progress and, with vendor information delivered on time, progress should be sufficient to support construction. Some of the major equipment fabrication durations appear short, but could be accomplished with early involvement by the vendors in the project. The overall construction and startup duration is sufficient. The EPC schedule has a good probability of success considering the schedule contingency of the target dates.

8.0 BUDGET REVIEW

8.1 Capital Cost

It is Brown & Root's opinion that the EPC Contract value of $63,500,000 is very competitive. A combined cycle cogeneration facility of this size will generally range $500-$600/kW. The cost of this facility producing 110,000 kW net is $577/kW which also includes the cost of the distilled water plant.

8.2 Project Cash flow

Brown & Root reviewed the Gross Billing Estimate represented in Exhibit L. The billing schedule is separated into engineering and design, pre-construction, cost of work and Contractor's fee. The Engineering payment is distributed over a ten (10) month period with reasonable application to value of work performed. The pre-construction payments total to $73,000 before financial closing and is reasonable considering planning and project setup expense. In February, 1995, at financial closing a billing of approximately 5% is indicated. We assume the majority of this billing represents down payment to equipment vendors. In month thirteen (13), October 1995, a 15% payment is due for delivery of the gas and steam turbines. This is considered reasonable.

The last payment in the project cashflow, approximately 5%, is more than the value of construction accomplished during the period and is probably retention held from equipment suppliers. In summary the Gross Billing Estimate reflects a reasonable payment schedule for value of work in place.

Per the contract, the Contractor will break down the scope of work into items with assigned payment value. The Contractor is also allowed to alter the payment value of these items during the project while under the guaranteed maximum price. Reviews of the break down should be performed to assure proper values are assigned, keeping payment relative to the value of work accomplished.

9.0 OPERATION AND MAINTENANCE AND PRO FORMA

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9.1 O&M Agreement

The draft O&M agreement is a "services" agreement for operation and maintenance of the facility by the Operator. All purchased materials, services and identified reimbursable costs are to the Owner's account and are considered variable O&M costs.

Provisions are included, in the form of a bonus/penalty incentive, to encourage the Operator to operate and maintain the facility in a manner consistent with that of a prudent Owner when operating and maintaining its own facility.

In reviewing the draft Operation and Maintenance Agreement, there are several items that, in Brown & Root's opinion, require attention by Panda-Kathleen, L.P.

Section 1. Definitions

There are two specific dates identified ("Commencement Date and Scheduled Commercial Operation Date), which have possibly changed due to the amended dates in the Power Purchase Agreement.

Section IV. Compensation

Item 4.01 provides for the compensation to be paid to the Operator during the time from the Commencement Date to Contract-In-Service date. Under Item 4.01(c), Item (ii) should read "the actual overtime hours worked multiplied by the applicable overtime hourly rate, or"

The draft of the agreement reviewed did not have any monies identified under Section IV, "Compensation" and Section V "Contract Price Adjustment". Consequently, no review and evaluation of the reasonableness of the costs have been made at this time. The monies identified in the Pro Forma for the "fixed O&M cost" of $0.0016/kwh and "variable O&M costs" of $0.0028/kwh appear to be reasonable. It should be noted that daily cyclic (i.e. on/off) operation of the cogeneration equipment will decrease the time between overhauls, particularly of the turbines, and increase the maintenance cost of these components by as much as 20% above normal base load operations.

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9.2 Pro Forma Technical Comments

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In Brown & Root's opinion, there appear to be two technical errors in the Pro Forma regarding the implementation of the performance data. The first has to do with performance degradation. The second is related to heat rate and its conversion into fuel consumption and cost.

It is customary to include in a Pro Forma projection estimates of output and heat rate degradation that are expected to occur over time. This degradation is due to the fouling and wear of the power generation equipment, primarily the GTG and STG. Degradation follows a cyclical pattern and most of the losses are recovered each time the machines are overhauled and the old parts replaced with new ones. For Pro Forma purposes, the degradation is usually shown as levelized for the purposes of simplicity. Average output capacity is typically degraded (reduced) about 2% to 3%. Average heat rate is degraded (increased) about 1% to 2%. These figures are normally shown directly in the Pro Forma in order to avoid any confusion. The implementation of degradation in the Pro Forma cannot be explicitly checked at this time, since heat balance diagrams that correspond to the summer and winter periods used in the Pro Forma have not been provided to the reviewer. However, based on the data provided at other ambient temperatures, it appears that degradation has not been included. This should be clarified and explanatory notes added to the pro forma as appropriate. The effect of degradation is real and material to the long term financial performance of the project.

The heat rates used in the Pro Forma are on the order of 7,800 Btu/kWh. It does not state whether these are in units of LHV or HHV. Fuel is measured in two different sets of units, i.e., lower heating value (LHV) and higher heating value (HHV). The difference for natural gas is about 11%, i.e., HHV/LHV = 1.11. For oil, the ratio is about 1.06. Equipment manufacturers usually use units in LHV terms (reference the ABB heat balance diagrams). The significance of this is that fuel is almost universally quoted and purchased in HHV units. In order to get the correct fuel usage and cost, it is imperative that the heat rate and unit fuel cost be in consistent units, i.e., either both in LHV or both in HHV units (HHV is usually used). In the case here, using the guarantee net heat rate of 7,373 Btu/kWh (LHV), it can be seen that this is equivalent to 8,184 Btu/kWh (HHV), i.e., 7,373 * 1.11 = 8,184. Therefore, in HHV terms, the heat rate should be on the order of 8,100 to 8,200 Btu/kWh. However, the figures used in the Pro Forma are about 7,800 Btu/kWh. With the addition of degradation, the heat rate should be in the 8,300 to 8,400 Btu/kWh range. This matter should be investigated and corrected if needed, since it directly affects the quantity and cost of fuel projected which directly impacts the financial projections. It is possible that these adjustments were made within the Pro Forma spreadsheet and were not available to the reviewer, but there were no notes to indicate such. In addition, a few check calculations

made by the reviewer indicated that the annual cost of fuel shown in the Pro Forma appears to be in error to the low side.

It is also noted that the pro forma does not include any operation on more expensive fuel oil, which is most likely to be used in the winter when gas could be in short supply. It would be expected that this fuel would be used at least part of the time over the long term and should be reflected in the pro forma.

10.0 EPC CONTRACT RISK ANALYSIS

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In general, the EPC Contract is in accordance with industry standard practice for this type of facility. The following opinions are offered regarding the provisions of the Contract relative to Lenders' risks.

10.1 Key Provisions

Compensation (reference Article 7)

The engineering and construction fees are covered by lump sum amounts of $3,500,000 and $5,600,000 respectively. The balance of the Contract value is reimbursed to the Contractor on a "cost reimbursable" basis up to the Guaranteed Maximum Price of $63,500,000 (plus approved Change Orders). Although the Guaranteed Maximum Price provides a cap on the costs reimbursed , there are no specific formulas on how the Contractor's cost is calculated. This could lead to somewhat "front-end loaded" payments to the Contractor that are not truly representative of the work performed. Verification can be made by the Lenders' Engineer by comparing physical percent progress against the percent of the Guaranteed Maximum Price that is invoiced by the Contractor.

Additional Compensation (reference Article 6)

The Contractor has fourteen (14) days to respond to the Owner's request for change with an estimate of the cost and schedule impact, or else lose the opportunity for Contract adjustment. The Contract does not specifically state a time duration in which scope changes which are non-Owner initiated must first be identified by the Contractor. The Contract stipulates that sufficient documentation is to be supplied by the Contractor for the Owner to verify amounts requested. There is no cap stipulated for the total amount of all change orders to the Guaranteed Maximum Price.

Schedule & Extensions (reference Articles 1, 5, and 6)

The Contract defines Guaranteed Substantial Completion Date as "July 1, 1996 (subject to extension for Force Majeure or Change Order) but in no event later than January 1, 1997 unless and to the extent such January 1, 1997 date is duly extended by FPC." Conditions of approval for schedule extensions are the same as for additional compensation. The Contract provisions for a Force Majuere adjustment are customary, however "storm" is defined as a Force Majeure event, which may lead to abuse of this provision.

Article 5, Section 5.2.3 identifies 9/1/96 as the milestone date for "Achieve Substantial Completion", which appears to contradict the definition of Guaranteed Substantial Completion.

Warranties (reference Article 11)

The term provided for correction of defects is a period of one year after Substantial Completion Date or one year from the discovery of such defect or deficiency (but in no event later than the first anniversary of Final Acceptance Date), which is extended if an item is replaced during the warranty period. This warranty period is considered a minimum compared to industry standards. However, in Brown & Root's opinion, the warranty period is sufficient to identify any significant defect or deficiency. The Contractor is required to "promptly" correct any such defect or deficiency at its own expense.

10.2 Performance Testing

Provisions for performance testing are presented in Section 19 of Exhibit F, Scope of Work, of the EPC Contract. Section 19.5 stipulates testing required for the cogeneration facility including the following:

- Electrical power output averaged over a 48 continuous hour period, while exporting steam to the distilled water plant as designed.
- Heat rate is to be verified over a 4 hour period of the electrical output test.
- Reliability run during which the unit must demonstrate better than a 95% availability over 200 continuous hours of operation (Note: This provision should be clarified to state that results must be corrected to design conditions).
- Stack emissions testing to demonstrate compliance of the gas turbine with the air permit.

It is Brown & Root's opinion that these tests are customary for cogeneration systems and should adequately prove the cogeneration systems capability to perform as designed. There are no specific performance tests identified in the Scope of Work for the distilled water plant. The plant will evidently be purchased from a third party Supplier and will carry the Supplier's guarantee/warranty, which is also not specifically stated. The system will be indirectly tested as the cogeneration system is tested.

10.3 Liquidated Damages

Provisions for liquidated damages for failure to meet schedule and/or cogeneration performance are stipulated in Articles 12 and 13 of the EPC Contract as follows:

Schedule (reference Article 12)

Liquidated damages of $35,000 will be assessed for each day that actual Substantial Completion is delayed beyond the Guaranteed Substantial Completion Date, up to a maximum of 30% of the EPC Contract value. This daily assessment should cover a significant portion (if not all) of the monetary impact due to the delay. The 30% cap is within the industry norm of 25-35% for this type of facility. Article 7 allows the Contractor to recover some or all of any liquidated damages as a reimbursable expense as long as the total amount paid to the Contractor does not exceed the Guaranteed Maximum Price. This provides incentive to the Contractor to control costs and maintain a reserve. Conversely, it also provides pressure to request Change Orders throughout the project to increase the Guaranteed Maximum Price.

Performance (reference Article 13)

Liquidated damages of $1,000 per kilowatt will be assessed for shortfall in electrical power output (with a tolerance of ± 1.5% allowed primarily for cumulative instrument accuracy deviations) below the Guaranteed Net Facility Output of 110,000 kW as corrected to Design Conditions. This should be sufficient to recover investment costs associated with a shortfall.

Liquidated damages of $30,000 will be assessed for each Btu/kWh actual heat rate above the Guaranteed Net Heat Rate of 7373 Btu/kW (with a tolerance of ± 2%) based on the low heating value (LHV) of the natural gas. This should be more than adequate to cover projected additional fuel costs caused by a less efficient (i.e. higher heat rate) unit.

The EPC Contract provides bonuses for additional net power output and lower heat rate of $300/kW and $15,000/Btu/kWh, respectively. This provides incentives for the Contractor to design the unit to be more productive and efficient. This is favorable to the Lenders up to the point where the bonus exceeds the potential for the facility to recover by increased energy sales (there are no caps on the bonuses).

There are no provisions in the EPC Contract for liquidated damages associated with shortfalls in the output of distilled water. The Confidential Memorandum dated September, 1994, discusses an output from the distilled water plant of 60,500 gallons per day (GPD). The EPC Contract requires that the distilled

water plant be capable of treating water flows identified in the Conceptual Water Balance, Appendix F to the Contract. However, there are specified guaranteed distilled water capacities. With a inlet cogen effluent water flow of 73,400 GPD and a reasonably low moisture content of the solid waste stream, it is probable that the distilled produced would be in excess of 60,500 GPD based on Brown & Root's experience..