EXHIBIT CKW

SCHEDULE 1

Record of Testimony
submitted by
Curtis K. Winterfeld

Utility	Proceeding	Subject of Testimony	Before	Client	Date
1. Intermountain Gas Company	Case No. U-1034-65	Class Cost of Service	Idaho Public Utilities Commission	Idaho Commission Staff	1977
2. Intermountain Gas Company	Case No. U-1034-69	Sales Adjustment for Normalized Weather; Class Cost of Service; Rate Design	Idaho Public Utilities Commission	Idaho Commission Staff	1978
3. Pacific Power & Light Company	Case No. U-1034-62	Routing of 500-kV Transmission Line Routing	Idaho Public Utilities Commission	Idaho Commission Staff	11-78
4. Idaho Power Company	Case No. U-1006-98	Development of Econometric and End-Use Model and Ten-Year Electric Load Forecast	Idaho Public Utilities Commission	Idaho Commission Staff	12-78
5. Intermountain Gas Company	Case No. U-1034-77	Determination of the Amount and Method of Passing Through Cost Increases from Interstate Pipeline	Idaho Public Utilities Commission	Idaho Commission Staff	1979
6. Idaho Power Company	Case No. U-1006-140	Jurisdictional and Class Cost of Service	Idaho Public Utilities Commission	Idaho Commission Staff	1979
7. Idaho Power Company	Case No. U-1006-118	Need for 345-kV Transmission Line	Idaho Public Utilities Commission	Idaho Commission Staff	3-79
8. Idaho Power Company	Case No. U-1006-137	Electric Utility Load Forecast	Idaho Public Utilities Commission	Idaho Commission Staff	6-79
9. Intermountain Gas Company	Case No. U-1034-75	Short-term Sales Model and Forecast for Natural Gas	Idaho Public Utilities Commission	Idaho Commission Staff	7-79
10. Washington Water Power Company	Case No. U-1008-133	Utility Service Connection Fees	Idaho Public Utilities Commission	Idaho Commission Staff	11-79
11. Idaho Power Company	Case Nos. U-1006-162 and P-300-9	Evaluation of Utility-sponsored Residential Conservation Program	Idaho Public Utilities Commission	Idaho Commission Staff	1980
12. Rulemaking-Idaho	Case No. P-300-19	Economic Feasibility of Residential Solar Water Heating	Idaho Public Utilities Commission	Idaho Commission Staff	1981
13. Idaho Power Company	Case Nos. P-300-14 and U-1006-165	Residential Weatherization and Utility Service Connection Fees	Idaho Public Utilities Commission	Idaho Commission Staff	2-81
14. Rulemaking-Pennsylvania	Cogeneration Rules	Method for Calculating Electric Utility's Costs Avoided by Cogeneration Purchase	Pennsylvania Public Service Commission	National Hydro, Inc.	1982

Utility	Proceeding	Subject of Testimony	Before	Client	Date
15. Rulemaking-Indiana	Cause No. 37117	Determination of Rates and Rules for Utility Purchase from Cogenerators	Indiana Public Service Commission	Eli Lilly and Company	6-83
16. Bonneville Power Administration	Docket Nos. WP-85 and TR-85	Revenue Requirements and Rate Adjustment Clauses	Bonneville Power Administration	Public Generating Pool	11-84
17. Washington Water Power Company	Cause No. U-85-36	Revenue Requirements and Rate Adjustment Clauses	Washington Utilities and Transportation Commission	Washington Commission Staff	12-85
18. Puget Sound Power and Light Company	Cause No. U-85-53	Ratemaking Treatment of Surplus Generation Capacity	Washington Utilities and Transportation Commission	Washington Commission Staff	2-86
19. Pacific Power and Light Company	Cause No. U-86-02	Normalization of Non-firm Revenues and Fuel Expenses; Ratemaking Treatment of Surplus Generation Capacity	Washington Utilities and Transportation Commission	Washington Commission Staff	8-86
20. Bonneville Power Administration	Docket Nos. WP-87 and TR-87	Revenue Requirements; Financial Policies Affecting Rate Stability	Bonneville Power Administration	Public Generating Pool	4-87
21. PacifiCorp	Docket No. 87.9.49	Impact of Merger	Montana Public Service Commission	Colorado River Energy Distributors Association	11-87
22. PacifiCorp	Docket Nos. 9266 SUB 104 and 9119 SUB 83	Impact of Merger	Idaho Public Utilities Commission	Colorado River Energy Distributors Association	11-87
23. PacifiCorp	Docket No. U-87-1338-AT	Impact of Merger	Washington Utilities and Transportation Commission	Colorado River Energy Distributors Association	2-88
24. PacifiCorp	Docket No. EC88-2-000	Impact of Merger	Federal Energy Regulatory Commission	Colorado River Energy Distributors Association	2-88
25. Puget Sound Power and Light Company	Docket No. U-88-2010-T	Review of Costs in Energy Cost Adjustment Clause	Washington Utilities and Transportation Commission	Commission Staff	5-88
26. PacifiCorp	Docket No. L8-1282	Review of EPUD Obligations Under BPA Power Purchase Contracts	Douglas County Circuit Court - State of Oregon	Emerald People's Utility District	7-88
27. Washington Water Power Company	Docket No. U-88-2363-P	Method of Calculating Energy Cost Adjustment Clause	Washington Utilities and Transportation Commission	Commission Staff	7-89
28. Puget Sound Power and Light Company	Docket No. U-89-2688-T	Normalization of Power Supply Expenses; Review of Prudency of New Power Supply Costs	Washington Utilities and Transportation Commission	Commission Staff	10-89

	Utility	Proceeding	Subject of Testimony	Before	Client	Date
29.	Southern California Edison Company and San Diego Gas & Electric Company	Docket No. EC89-5-000	Analysis of Power Supply Benefits/Consolidation of Transmission Rights Due to Merger	Federal Energy Regulatory Commission	Cities of Anaheim, Azusa, Banning, Colton and Riverside, California	11-89
30.	Southern California Edison Company and San Diego Gas & Electric Company	Appl. No. 88-12-035	Analysis of Power Supply Benefits/Consolidation of Transmission Rights Due to Merger	California Public Utilities Commission	Cities of Anaheim, Azusa, Banning, Colton and Riverside, California	4-90
31.	Washington Water Power Company	Docket No. UE-900093	Normalization of Power Supply Expenses; Proposal for Semi-Annual Rate Adjustments	Washington Utilities and Transportation Commission	Commission Staff	5-90
32.	Northeast Utilities Service Company	Docket Nos. EC90-10-000, ER90-143-000, ER90-144-000, ER90-145-000, EL90-9-000	Effects of Proposed Merger on Bulk Power Competition and NEPOOL Cost Sharing	Federal Energy Regulatory Commission	Cities of Boylston, Braintree, Georgetown, Littleton, Princeton, Reading, Rowley, Shrewsbury, Sterling, Taunton and West Boylston, Massachusetts	5-90
33.	Puget Sound Power and Light Company	Docket Nos. UE-901183 and UE-901184	Use of Simplified Dispatch Model and Banded Return for Rate Adjustment Clause	Washington Utilities and Transportation Commission	Commission Staff	1-91
34.	Puget Sound Power and Light Company	Docket No. UE-910626	Projected Power Supply Expenses, Purchases from QF, and Nonfirm Energy Prices	Washington Utilities and Transportation Commission	Commission Staff	9-91
35.	Puget Sound Power and Light Company	Docket No. UE-920630	Projected Power Supply Expenses, Purchases from QF, and Nonfirm Energy Prices	Washington Utilities and Transportation Commission	Commission Staff	9-92
36.	Washington Natural Gas Company	Docket No. UG-920840	Normalization of Natural Gas Sales and Weather Adjustment Clause	Washington Utilities and Transportation Commission	Commission Staff	4-93
37.	Puget Sound Power and Light Company	Docket Nos. UE-920433, UE-920399, UE-921262	Projected Power Supply Expenses, Purchases from QF, and Nonfirm Energy Prices	Washington Utilities and Transportation Commission	Commission Staff	5-93
38.	Guam Power Authority	Docket No. 93-004	Load Forecast and Evaluation of Resource Additions	Guam Public Utilities Commission	Guam Power Authority	9-93

EXHIBIT BEP

GUAM POWER AUTHORITY

TESTIMONY OF

BRUCE E. PECON

NEW TANKAGE REQUIREMENTS

MAY 1994

DOCKET NO. 93-004

I. QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Bruce E. Pecon. I am Comptroller of the Guam Power Authority ("GPA"). My business address is P.O. Box 2977, Agana, Guam 96910.

Q. PLEASE DESCRIBE YOUR ACADEMIC AND PROFESSIONAL BACKGROUND.

A. I graduated from the University of Arizona with a BBA in Business Administration in 1965. I also obtained a second bachelors degree from the University of Guam, with emphasis in accounting in 1979. I received an MBA from the School of Business, University of Arizona in 1967. I am also a Certified Public Accountant (CPA), a member of the American Institute of Certified Public Accountants (AICPA), past President of the Guam Society of Certified Public Accountants, and past member of the AICPA Council.

Additionally, from 1967-1971, I served in the United States Air Force as a Management Engineering Officer, and I am presently a Colonel in the USAF Reserves.

I was selected to be an analyst with the Government of Guam's Bureau of Budget and Management Research in 1971. After 18 months, I was promoted as Deputy Director of that agency where I served for two years working closely with GovGuam's budgeting process. I was also selected to be the Chief Fiscal Officer for the Guam legislature where I continued to work with GovGuam's budgeting process for another two years.

I joined the Guam Telephone Authority as Assistant Comptroller for Plant Accounting and Data Processing in 1976, and performed for a year in that capacity before joining the Port Authority of Guam as their Comptroller. The Port promoted me to Assistant General Manager of Administration and Finance after 18 months with the Port where I prepared numerous financial plans and conducted evaluations of their tariff structure.

I left the Port Authority to accept a position with Touche Ross & Co. in March 1981 where I conducted management consulting engagements as well as performed financial audits for almost six years. I left this position to accept the position of Comptroller of GPA in December 1986.

My duties at GPA include management of all accounting, billing and financial reporting functions as well as financial planning, rate activities and fiscal policy development.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I will summarize the Authority's rationale for pursuing additional oil storage tankage and blending facilities. I will also provide the basis for the Authority's preliminary cost estimates, and seek PUC approval for the Authority to incur debt as a the means of financing this needed new tankage.

Q. COULD YOU SUMMARIZE THE REMAINDER OF YOUR TESTIMONY?

A. I will provide recommendations describing the need for additional tankage, plus provide comments on all related aspects of this project

III. RECOMMENDATIONS

Q. MR. PECON, PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I recommend that GPA be authorized to proceed with the construction of new tankage as set forth in Exhibit BEP Schedule 2.

I also recommend that PUC authorize GPA to incur new revenue bond debt up to the $12.7 million set forth in Exhibit BEP Schedule 2.

Q. WHY IS GPA REVIEWING ITS TANKAGE NEEDS?

A. The Authority is undergoing a significant expansion of its generating facilities and it has become apparent that GPA will likely have to increase its tankage to insure that sufficient fuel is on-hand at all times. This is especially important since GPA is 100% dependent on oil to run its generators.

Additionally, GPA's 3-year fuel contract was to have expired June 30, 1994, so the Authority has begun to re-visit all aspects of its procurement process for fuel, e.g. insurance, transportation costs, reference prices, delivery schedules, Oil Pollution Act of 1990, physical properties, shipment sizes, etc. The current fuel contract has been extended so that the new contract can be

bid on or about June 20, 1994, with a commencement date for the new fuel supply agreement of December 1, 1994, and an expiration date of November 30, 1995.

Q. HAVE YOU PERFORMED AN ANALYSIS OF GPA'S TANKAGE NEEDS?

A. Yes. A March 1994 report entitled "Fuel Procurement Alternatives" was prepared by R.W. Beck. For your convenience I have attached Section IX entitled "Fuel Storage" of that report as Exhibit BEP Schedule 1 hereto.

Q. WHAT WERE SOME OF THE MAJOR ISSUES IN THIS ANALYSIS?

A. The Beck study identifies the major issues to be considered in the fuel procurement process. The primary issues related to tankage include: desired minimum fuel inventory, amount of existing fuel storage on Guam, transportation costs (as a function of delivery size), environmental impacts, payment terms, insurance costs, and tank O&M costs.

Q. DID YOU CONSIDER LSFO IN THIS ANALYSIS?

A. Yes. Since Navy will no longer be supplying LSFO to GPA, the Authority has included the LSFO in the same bid as the HSFO. In fact, GPA expects that it will need roughly 300,000 barrels per year (per the Beck report). Since GPA

must begin supplying its own LSFO, there will be a need for more tankage specifically for this LSFO.

Q. DID YOU CONSIDER LEASING TANKAGE?

A. Yes. However, upon reviewing all tankage on Guam, we found that only Shell and the U.S. Navy possessed any significant storage for "black oil". Shell has significant storage, but is currently leasing most of it for use in trans-shipment of "clean" oil, which cannot be commingled with "dirty" black oil. Moreover, some tanks are still unavailable due to damage sustained in the August 1993 earthquake. So, although Shell has some tanks it appears increasingly unlikely that they will be available even for lease.

The Navy has five 50,000 barrel tanks which it has used for LSFO storage over the years. They have indicated a willingness to lease these tanks to GPA for LSFO storage, and this offer is currently under review. However, this is only a short term solution, as GPA must eventually construct its own LSFO tankage.

Q. HOW WILL THE UPCOMING FUEL CONTRACT BID BE AFFECTED BY THE NEW TANKAGE?

A. The upcoming fuel contract bid is affected only to the extent that Navy is willing to lease its tankage for storage of the LSFO. The Authority has no significant storage capability for LSFO, as it only has its two 268,000 barrel tanks for HSFO storage plus some small day tanks. So, if Navy and GPA agree to lease terms, tankage will not be a concern for this upcoming fuel contract which is scheduled to start December 1, 1994.

Q. WILL ENVIRONMENTAL PERMITS BE REQUIRED BEFORE ADDITIONAL TANKS ARE CONSTRUCTED?

A. Yes. To add tanks in the area adjacent to the existing storage tanks will likely require permits from the U.S. Army Corps of Engineers and Guam Environmental Protection Agency. Permits may also be required from several other governmental agencies, including the Guam Territorial Planning Commission.

Based on very preliminary review, it appears the most critical issue in permitting will be the proximity of wetlands. Guam Economic Development Agency ("GEDA") had prepared a recent survey of property adjacent to the site

indicating the presence of wetlands on the adjacent property. We have requested a copy of this survey from GEDA for review. At this time, however, we do not know the extent to which the GPA site would be affected by wetlands, if at all. Even if it is affected, mitigation or replacement are typical options that would allow site development.

We estimate that receiving all permits will require no more than eight to ten months, including the time for GPA to prepare the necessary applications.

Q. ARE THERE ANY SAVINGS FROM GETTING LARGER DELIVERIES?

A. Yes. Current deliveries are roughly 250,000 barrels every 5 weeks, with transportation costs of approximately $1.70/bbl (per Beck report). If larger shipments of say 600,000 barrels could be accommodated the transportation costs may by $.85/bbl (per Beck report), for an $.85/bbl savings of $2.0M ($.85 x 2,300,000 bbl).

Q. DOES GPA'S HSFO REQUIRE BLENDING TO ACHIEVE THE DESIRED SPECIFICATIONS?

A. Yes. The HSFO purchased for GPA's generation plant requires certain chemical properties to meet the generator's manufacturer specifications.

Historically, our fuel suppliers have devised ways of blending two products so as to yield the desired properties, e.g. frequently this was accomplished by storing the two kinds of fuel in a ship's hold, and then blending the two via the natural movement of the ship during its voyage to Guam.

The Beck report indicated that a significant savings is likely if GPA could purchase a more standard product on the fuel market and do its own blending on Guam. It is with this in mind that Exhibit BEP Schedule 2 was developed by GPA's Generation Department to determine GPA's tankage capacity.

Q. COULD YOU ELABORATE ON EXHIBIT BEP SCHEDULE 2?

A. Yes. Schedule 2 contains one 268,000 barrel HSFO tank (same size as GPA's two existing HSFO tanks), plus one 150,000 barrel LSFO tank (to replace the Navy leased tanks), plus one blending tank (to hold the blended product, once it is determined that it is economical to construct our own blending facilities).

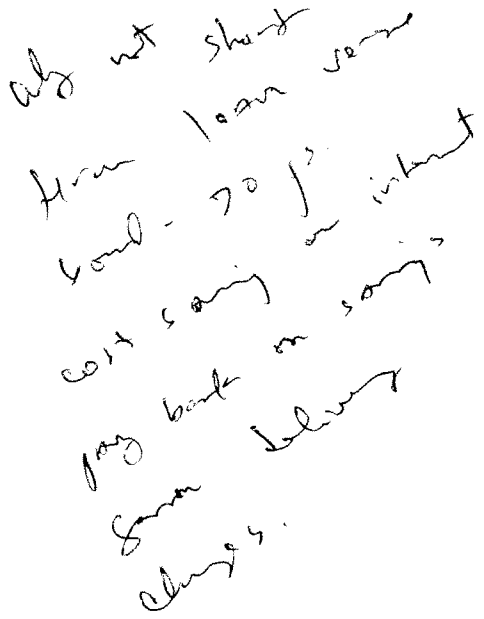
Q. DID YOU ESTIMATE THE COST TO CONSTRUCT THESE FACILITIES?

A. Yes. Schedule 2 contains some cost factors to construct and provide the civil engineering costs (design, foundation, etc.). It is felt that these costs are quite conservative, and would be adjusted by engineers as appropriate before the

project costs are finalized. The estimated total cost in Schedule 2 is $12.7 million.

Q. HOW WOULD YOU FINANCE THESE FACILITIES?

A. A project of this magnitude will require external financing, as it cannot be funded during the 2.5 year construction period from internally generated funds without causing a significant shortfall in the ongoing engineering projects and other capital items.



Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

EXHIBIT BEP

SCHEDULE 1

Section IX

FUEL STORAGE

R.W. BECK
AND ASSOCIATES

Section IX

FUEL STORAGE

The need for and cost-effectiveness of fuel storage is related to a variety of factors, including transportation costs, reliability of deliveries and predictability of fuel usage, and, of course, the cost of owning and maintaining storage facilities. GPA's existing fuel storage capability is described in detail in Section II. In this section, the requirements and economics of additional fuel storage capacity are evaluated.

DEFINING THE REASONS FOR STORAGE

Fuel storage serves several purposes. First, for HSFO -- GPA's principal fuel, there are no on-island fuel suppliers. Therefore, GPA cannot call upon bulk storage supplies of others to meet its daily or weekly requirements. This requires that GPA provide the bulk storage facilities required to hold fuel as it is delivered to Guam via tanker. These bulk storage facilities must be compatible with the timing, cargo sizes, and transportation economics of the shipping business. Storage must also allow for minimum inventory levels to be maintained to protect against uncertainty in fuel deliveries and fuel requirements. Uncertainties in fuel deliveries include delays caused by equipment problems (i.e., at the fuel load dock, the fuel tanker, etc.), by scheduling errors, by natural phenomena (e.g., typhoons), or by failure for any reason of the fuel supplier (and its agent for shipping) to perform. Storage may also be used for timing of purchases to take advantage of (perceived) favorable fuel pricing conditions and avoid or delay purchases during unfavorable pricing conditions.

For LSFO, Navy has acted as the fuel supplier for the IWPS and, as part of this responsibility, has provided the bulk storage on-island. GPA's storage requirements have been limited to the day tank at Cabras. If, however, GPA implements recommendations made elsewhere in this report to purchase LSFO through competitive bidding, it will no doubt need to acquire bulk storage capacity on-island for LSFO (or the LSFO blending component(s)). In this regard, the role and economics of LSFO storage capacity would be similar to those of HSFO; nonetheless, it would differ in that the amount of LSFO used annually is only estimated at 7 percent to 10 percent of the annual HSFO requirements. The lower usage will mean generally smaller cargo sizes, less frequent deliveries, or some combination of both. Since LSFO can be physically substituted for HSFO (albeit a substantial cost penalty) at the Cabras, Piti, and Tanguisson plants, the additional bulk storage of LSFO can be considered in establishing minimum fuel inventory levels of LSFO and HSFO. (To a more limited degree, bulk storage of diesel fuel maintained on-island by others can also be considered available to support temporary shortages of HSFO or LSFO.)

For diesel fuel, GPA currently contracts for fuel delivered by the supplier to each of its diesel-fired plant. Accordingly, the supplier, not GPA is responsible for maintaining adequate bulk storage on-island. Since no change is recommended to this practice, GPA's acquiring bulk storage for diesel fuel was not considered or evaluated.

STORAGE OPTIONS

Options for new storage include construction of new tanks on existing or new sites and short-term or long-term leasing of existing storage owned by others. Only on-island storage was considered in detail. Off-island storage was initially discussed with fuel suppliers and tank owners, this option was soon

discarded as being ineffective. Off-island storage would provide little or no security for fuel supply continuity to the IWPS and would compound, not improve, the economics and logistics of fuel transportation. The principal use of off-island storage would be the timing of purchases to fuel price conditions -- market timing -- that was determined to be done more effectively, if done at all, through financial instruments, rather than physical inventory.

The most attractive site for new storage would be adjacent to GPA's existing tanks. Use of the existing site obviously minimizes construction of receipt or delivery piping and centralizes tank maintenance and security. There appears to be land at the existing site controlled by GPA adequate for one to two additional tanks. A preliminary review of expansion at the existing site indicated that it appeared generally feasible from an environmental viewpoint, although there may be some limitations imposed due to existence of wetlands. No other on-island sites were evaluated or considered, pending further investigation by GPA of use of the existing site.

The cost of new storage tanks was based on standard industry estimates, adjusted for local conditions, and price quotations received from a construction company specializing in fuel storage tank construction and familiar with Guam design requirements. Based on these sources, an incremental cost of $10.20 per barrel was estimated. This estimate did not include potential costs of land acquisition (for a new site) or extensive environmental studies or mitigation that may be required in permitting either at GPA's existing tank site or a new site.

Shell Guam was contacted regarding the leasing of tanks. While this option should not be discarded, the indication based on initial contacts with Shell was not encouraging. Shell Guam has apparently leased a substantial portion of its available storage to an off-island entity for use in trans-shipment (i.e., temporary storage en route to a final destination). In addition, some tanks may be unavailable at this time due to damage sustained in the August 1993 earthquake. These factors appear to limit the options for economical short-term leasing of tankage, particularly for residual oil that is a "dirty" product requiring thorough cleaning of the storage tank prior to its use for a "clean" product, such as diesel fuel. Nonetheless, Shell Guam was willing to meet to discuss specific requirements of GPA, once those are better defined.

Federally-owned tanks operated by the Navy are another potential for storage acquisition by GPA, to be leased or purchased outright. Because of the on-going and sometimes sensitive discussions between GPA and Navy on several matters relating to the transfer of certain power supply facilities of Navy to GPA, no direct contacts of Navy were made as part of this study.

ANALYSIS OF STORAGE OPTIONS

Due to the related nature of the many decisions and implementation activities affecting GPA's fuel storage requirements, it was determined that specific recommendations as to either the type (i.e., leasing existing or constructing new tanks) or amount of additional storage would be premature. Instead, a preliminary analysis was prepared based on current information and GPA's current fuel procurement practices. While the results of this analysis are instructive, they are intended as preliminary results, which would be updated and refined to reflect additional information to be obtained as a follow-on in the implementation phase.

The analysis was performed using a relatively simple model, programmed in a spreadsheet. The model was designed so as consider the major issues affecting the need for and economics of GPA's fuel

storage and to readily incorporate updated information and estimates (e.g., cost of constructing new tanks) when and as this newer information is available. Information entered into the model include the following:

Inputs to Fuel Storage Model

- Projected loads
- Projected fuel prices
- Amount of existing fuel storage
- Desired minimum fuel inventory
- Maximum delivery (constrained currently by draft of the tanker)
- Transportation cost as a function of delivery size
- Cost of new or leased storage
- Cost of maintaining and insuring new storage
- Uncertainty in fuel delivery schedules
- Inflation and cost of capital
- Options for additional storage

Based on weekly periods, the model evaluates fuel costs, inventory holding costs, and new storage costs (i.e., capital-related, maintenance, and insurance costs) for a 24-month period. The effects of uncertainty can be evaluated for load and fuel price projections and the scheduling of fuel deliveries based on fluctuations randomly drawn from a distribution either provided within the model based on historical patterns (e.g., for fuel prices) or as entered directly (e.g., delays in deliveries). To account for cost and benefits associated with tank additions that would occur beyond the 24-month study period, a real, rather than nominal, cost of capital is used to calculate capital-related carrying costs of new tanks. This is equivalent on the basis of net present value to providing a salvage value for the useful life of the tank remaining at the end of the study period. Total, fuel-related costs are summed and the present value calculated. For analysis incorporating uncertainty, the average and standard deviation of total fuel costs, diesel fuel costs, and minimum fuel inventory levels are calculated and stored.

At this time the model incorporates two options for scheduling of deliveries: one based only on just-in-time delivery (as discussed above) and the other based on just-in-time delivery coupled with consideration of current prices relative to expected prices based on a simple linear projection. In addition to providing flexibility in the input of assumptions and storage options, the model can also be readily modified to incorporate other considerations or alter the delivery scheduling or costing logic. A sample output report from the model is provided as Appendix E showing the results for a particular case using the uncertainty option for deliveries.

ADDITIONAL STORAGE

The evaluation of GPA's storage options were based on construction of new storage for HSFO. As indicated above, LSFO storage was not considered at this time, since currently Navy, not GPA, provides bulk storage for this fuel. Leasing was also not evaluated pending further discussions with Shell Guam or Navy as to the availability and cost of specific lease options. When and as GPA implements the recommendations to purchase LSFO through a competitive bid procedure and makes some further evaluation of the environmental restrictions, if any, of adding new tanks in the area adjacent to its existing bulk-storage tanks, the model can be used to iteratively optimize the storage and minimum inventory levels associated with both LSFO and HSFO.

Pending further implementation of the program, however, a preliminary evaluation was made of HSFO storage. This evaluation looked at 48 specific combination of storage tank additions and two mini-

mum inventory levels, the current level of 210,000 barrels and a reduced level of 105,000 barrels. The combination of storage additions looked at the timing of tank additions, the size, and the combination of more than one tank. Tank sizes ranged from 100,000 barrels to 500,000 barrels.

The preliminary results were sensitive to assumptions regarding the cost of new tanks, the relationship between transportation cost and cargo sizes, the desired minimum inventory level, and maximum cargo size. Based on information presented elsewhere in this report, a maximum cargo size of 95,000 metric tons was assumed and transportation costs were assumed to vary from $1.70 per barrel based on a 40,000 metric ton (about 264,000 barrels) cargo to $0.85 per barrel based on a 95,000 metric ton (about 627,000 barrel) cargo.

The preliminary results show that an additional 200,000 to 300,000 barrel of storage capacity should be added by GPA. The principal benefit of the additional capacity would be allowing larger cargo size and lowering of associated transportation costs. Since GPA's transportation costs are, in its current contractual arrangements, built into a margin received by the fuel supplier, in order to receive the full benefit of the economics of larger shipments, the availability of the additional storage would have to be included at the time a new contract is being bid. (Of course, if storage were added during the term of an agreement, GPA may be able to negotiate with the fuel supplier for a reduction in the margin, but it is doubtful that the fuel supplier would provide GPA with the full benefit of the transportation savings.) Within this range of 200,000 to 300,000 barrels, a single tank or two tanks (e.g., one 200,000 and one 100,000) were the most economical. It should be emphasized again that the precise size and number of tanks should be re-evaluated when implementation of recommendations for LSFO purchases and further investigation of GPA's existing tank site are completed.

EXHIBIT BEP

SCHEDULE 2

COST ESTIMATE

FUEL OIL STORAGE TANK CONSTRUCTION

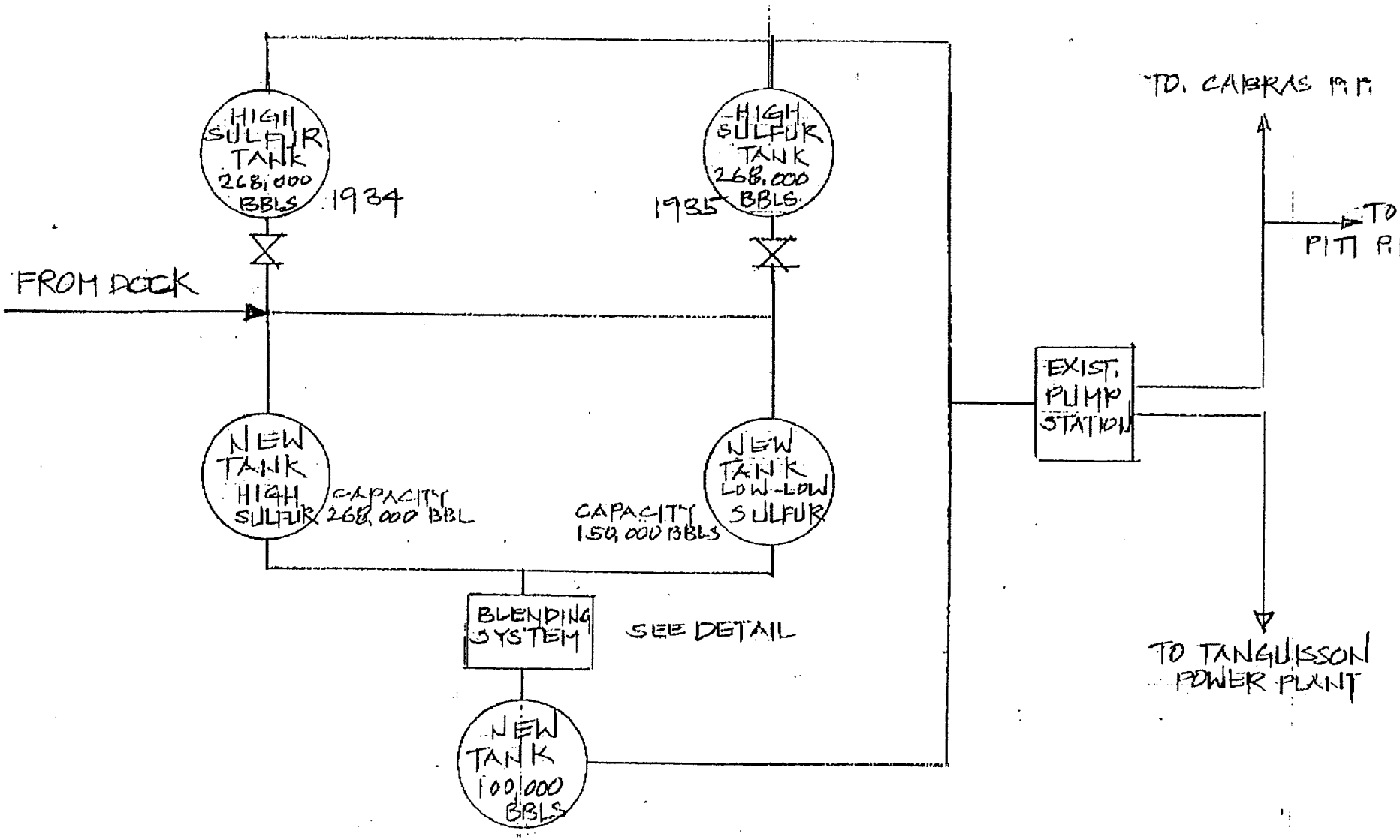
Prepared by: OVD/RD
GIVEN: To construct three (3) fuel oil storage tanks at Cabras Power Plant.

1 ea. = 268,000 bbls. high sulfur fuel oil storage tank
1 ea. = 150,000 bbls. low sulfur fuel oil storage tank
1 ea.= 100,000 bbls. fuel oil storage blending tank

** Tank Construction Pricing based on CBI-Phil. given cost estimate.

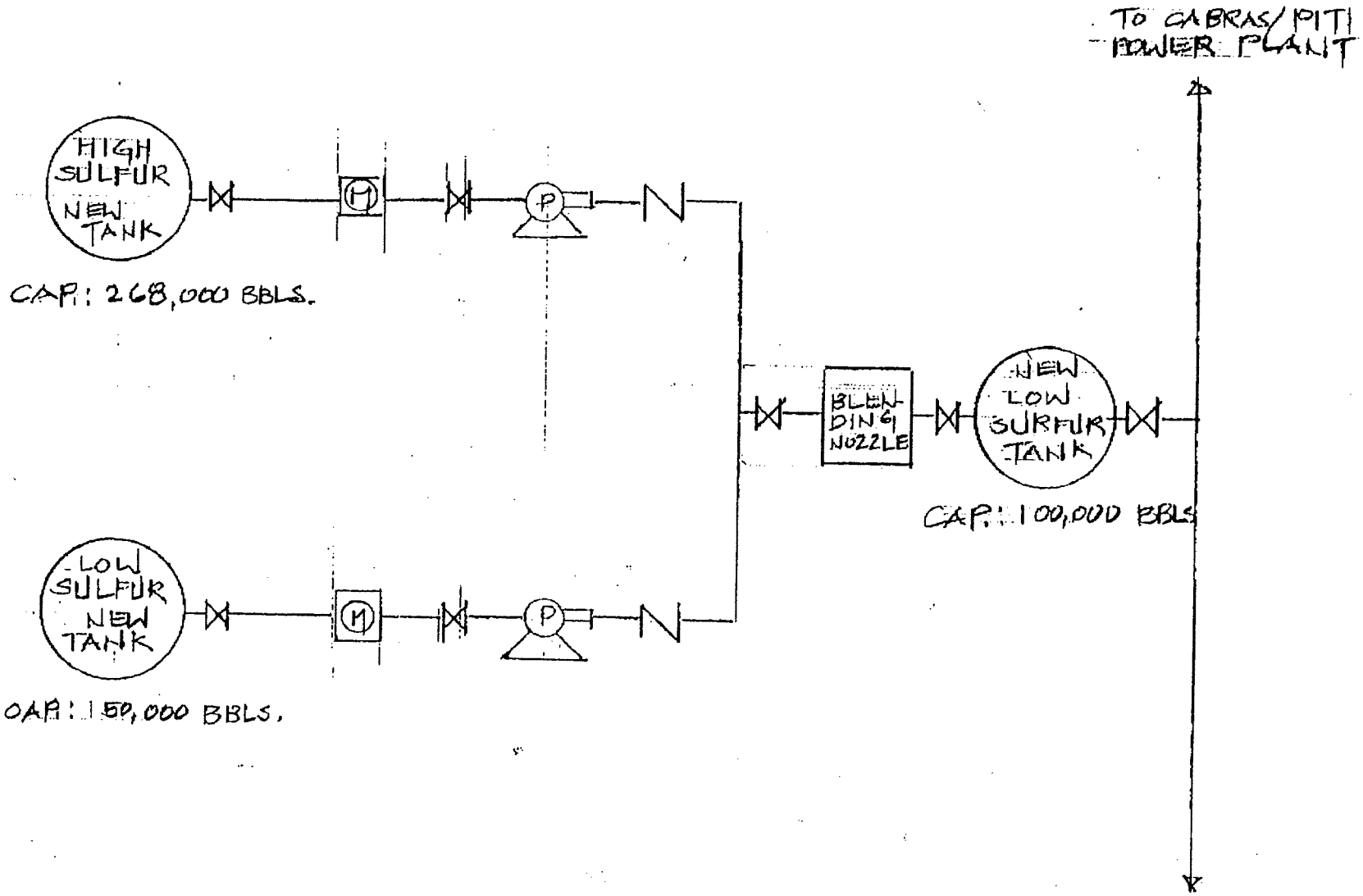
Cost Estimate Summary

A. Tank Construction:		
High Sulfur Storage Tank = 268,000 bbls x $6.00/bbl. =		$1,608,000.00
Low Sulfur Storage Tank = 150,000 bbls x $6.00/bbl. =		$900,000.00
Blending Storage Tank = 100,000 bbls x $6.00/bbl. =		$600,000.00
Sub-total	———	$3,108,000.00
B. Civil Works: (Design & Construction of Tank foundation and secondary containment area) 250% of Tank construction cost	———	$7,770,000.00
C. Tank Painting= (estimated at $1.5/bbl.) Painting work shall include saridblasting, and painting of all exterior surfaces and portion of the interior surfaces from tank interior bottom to about 20 ft. high.		
Exterior areas:		
High Sulfur Storage Tank = 268,000 bbls x $1.50/bbl. =		$402,000.00
Low Sulfur Storage Tank = 150,000 bbls x $1.5/bbl. =		$225,000.00
Blending Storage Tank = 100,000 bbls x $1.5/bbl. =		$150,000.00
Sub-total	———	$777,000.00
Interior areas: 50% x $777,000	———	$388,500.00
D. Miscellaneous equipment (blending accessories, pumps, etc.)	———	$100,000.00
E. Pump Station Modification or relocation	———	$600,000.00
Total Estimated Project Cost	———	$12,743,500.00



PROPOSED GENERAL FUELING SYSTEM

NTS



FUEL BLENDING SYSTEM

NOT TO SCALE

GUAM POWER AUTHORITY

TESTIMONY OF

JOAQUIN C. FLORES

CABRAS SLOW SPEED DIESEL #4

MAY 1994

DOCKET NO. 93-004

I. QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Joaquin C. Flores. I am the Manager of Engineering for Guam Power Authority (GPA). My business address is P.O. Box 2977, Agana, Guam 96910.

Q. PLEASE DESCRIBE YOUR ACADEMIC AND PROFESSIONAL BACKGROUND.

A. I graduated from the University of Portland in Oregon, with a Bachelor of Science Degree in Electrical Engineering in 1981. I also received a Masters of Science Degree in Electrical Engineering from the University of Missouri at Rolla in 1982. I am a registered Professional Engineer in Guam.

I first joined GPA in 1983 as an Electrical Engineer and was responsible for preparing plans, cost estimates and work specifications for job order documents for distribution projects. In 1986, I became Supervisor of System Planning and was responsible for overall planning of Engineering Capital Improvement Projects (CIP). In 1990, I became Assistant Manager of Engineering and directly assisted the Manager of Engineering with staffing, administration and operation of

the division. In early 1994, I assumed my present position where I am responsible for the overall administration of the technical and planning arm of the Authority.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony in this proceeding is to provide supporting information to GPA's application to construct and finance a second 35 megawatt low speed diesel unit at the Cabras Power Plant site. As stated in the Commission's Order of Docket No. 93-004, the immediate procurement of a second baseload unit is reasonable, prudent and of substantial economic benefit to GPA.

III. CONSTRUCTION ISSUES

Q. PLEASE PROVIDE THE COMMISSION AN UPDATE OF THE STATUS OF THE CONSTRUCTION OF THE FIRST UNIT BY KOREA HEAVY INDUSTRIES AND CONSTRUCTION COMPANY (KHIC).

A. KHIC is now in the stage of pouring the foundation for the engine generator of Cabras #3.. Most of the design drawings have been reviewed by GPA, some of which were returned for correction and some were approved as noted. Project review meetings are constantly held to discuss construction and environmental issues. KHIC has indicated to GPA that they may complete the project three months in advance (June 1995). Because of potential dewatering problems to the first unit imposed by the construction of the second unit, it was agreed that KHIC will provide the required engineering fill for the second unit (Cabras #4) during the construction of the first unit to alleviate any potential dewatering problem to the first unit.

Q. CAN YOU PROVIDE THE COMMISSION A TIMETABLE FOR ACHIEVING COMPLIANCE WITH ALL ENVIRONMENTAL REQUIREMENTS TO ENABLE GPA TO PROCEED WITH THE CONSTRUCTION AND OPERATION OF THE SECOND BASELOAD UNIT?

A. Yes. The Authority tasked R.W. Beck of Denver to provide some timeline regarding the permitting issues that need to be resolved the permit GPA to construct and operate the second unit. I am submitting as Schedule 1 that timeline table provided by R.W. Beck for the Commission's information and review. Although the dates given are estimated, it is my opinion that all the issues will be resolved in a timely manner to permit GPA to construct and operate the second baseload unit.

Q. CAN YOU EXPLAIN TO THE COMMISSION WHAT, IF ANY, CAN GPA BENEFIT WITH THE TIMELINESS OF THE COMMISSION'S APPROVAL OF THIS APPLICATION?

A. Yes. In accordance with the price proposal of KHIC, GPA stands to save 5% of the total cost for the second unit if GPA issues the award and notice to proceed by June 30, 1994, subject to bond approval. As indicated in the attached computations, GPA will realize a savings of approximately three million dollars. Notice to proceed will be conditioned that KHIC will not perform on site construction until all environmental issues or permits are resolved and bond issue approved by PUC and Legislature.

IV. RECOMMENDATIONS

Q. PLEASE SUMMARIZE YOUR RECOMMENDATION TO THIS COMMISSION.

A. I recommend the Commission's prompt approval of the financing of the Cabras #4 Slow Speed Diesel Power Plant Project (Unit #2) to KHIC by June 30, 1994. Although there are environmental issues to be resolved, the Authority will require that KHIC comply with all permitting requirements by U.S. EPA and other regulatory agencies.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

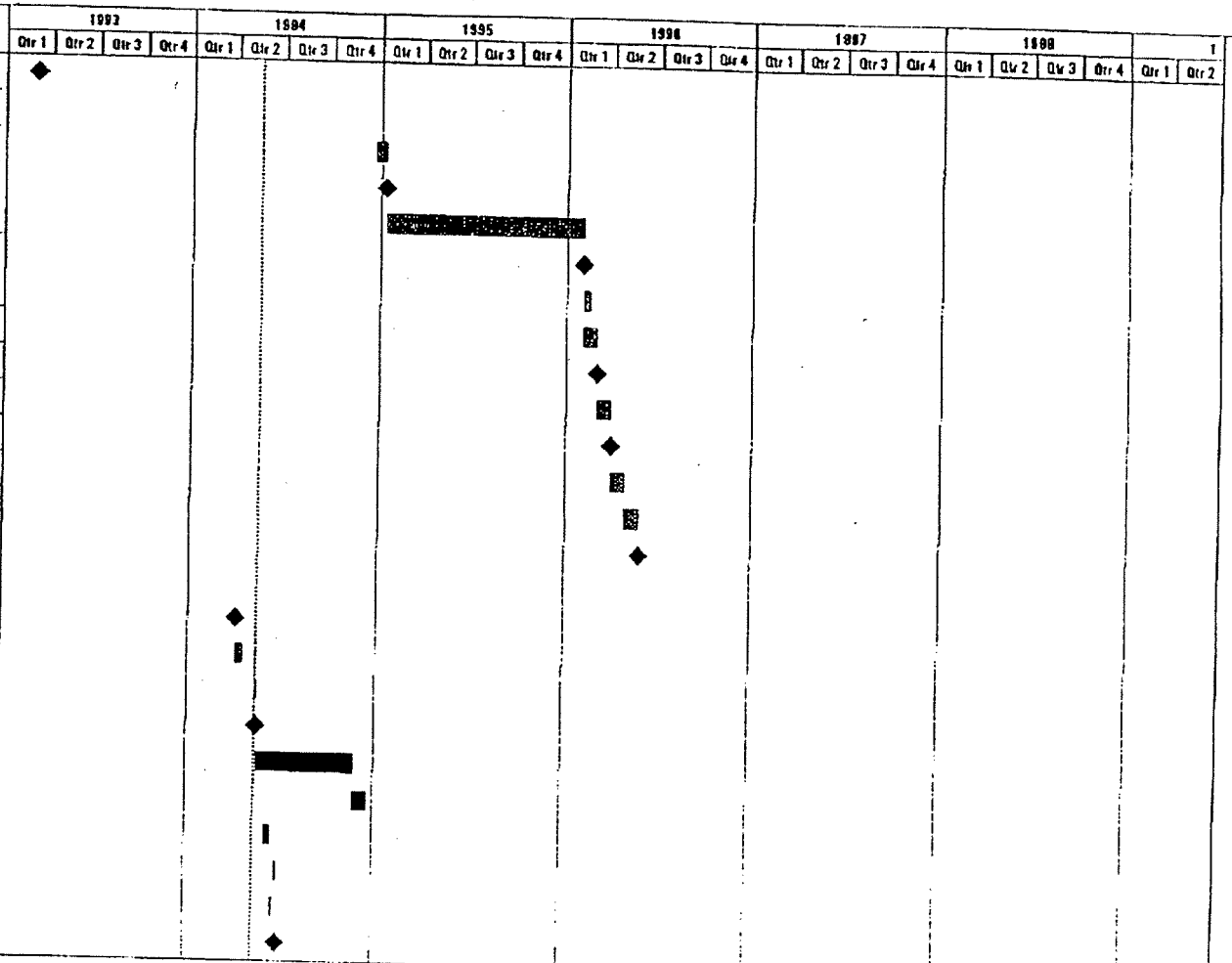
A. Yes it does.

EXHIBIT JCF

SCHEDULE 1

CABRAS UNIT 4 PERMITTING SCHEDULE May 13, 1994

ID	Name	WBS	Early Start	Early Finish	Duration	% Complete
1	GEPA letter on NPDES/EIA conditions	GEPA	3/2/93	3/2/93	0d	100%
2	NPDES		12/21/94	5/23/96	372d	0%
3	Prepare final application	RWB	12/21/94	1/10/95	15d	0%
4	Submit app to USEPA	RWB	1/10/95	1/10/95	0d	0%
5	USEPA reviews application	USEPA	1/11/95	2/1/96	277d	0%
6	Internal draft issued	USEPA	2/1/96	2/1/96	0d	0%
7	Review by GPA	GPA	2/2/96	2/15/96	10d	0%
8	Review by GEPA	GEPA	2/2/96	2/29/96	20d	0%
9	Issue 401 Water Qual Cert	GEPA	2/29/96	2/29/96	0d	0%
10	Revise internal draft	USEPA	3/1/96	3/28/96	20d	0%
11	Issue Draft NPDES	USEPA	3/28/96	3/28/96	0d	0%
12	Public Comment Period	USEPA	3/28/96	4/25/96	28d	0%
13	Revise NPDES	USEPA	4/26/96	5/23/96	20d	0%
14	Issue Final NPDES	USEPA	5/23/96	5/23/96	0d	0%
15	EIA Revision		4/4/94	7/4/95	326d	0%
16	Authorization to proceed	GPA	4/4/94	4/4/94	0d	0%
17	Develop water qual monitoring plan	RWB	4/5/94	4/18/94	11d	0%
18	Review with GEPA	RWB	5/18/94	5/17/94	2d	0%
13	Approval by GEPA	GPA	5/17/94	5/17/94	0d	0%
20	Conduct water monitor. Cabras 3	GPA	5/18/94	11/22/94	135d	0%
21	Analyze results of water monitoring	RWB	11/23/94	12/20/94	20d	0%
22	Develop EIA scope	RWB	6/5/94	8/17/94	10d	0%
23	Review with GEPA	RWB	8/27/94	7/1/94	5d	0%
24	Review with GPA	RWB	8/20/94	8/24/94	6d	0%
25	Approval of EIA scope	RWB	7/1/94	7/1/94	0d	0%

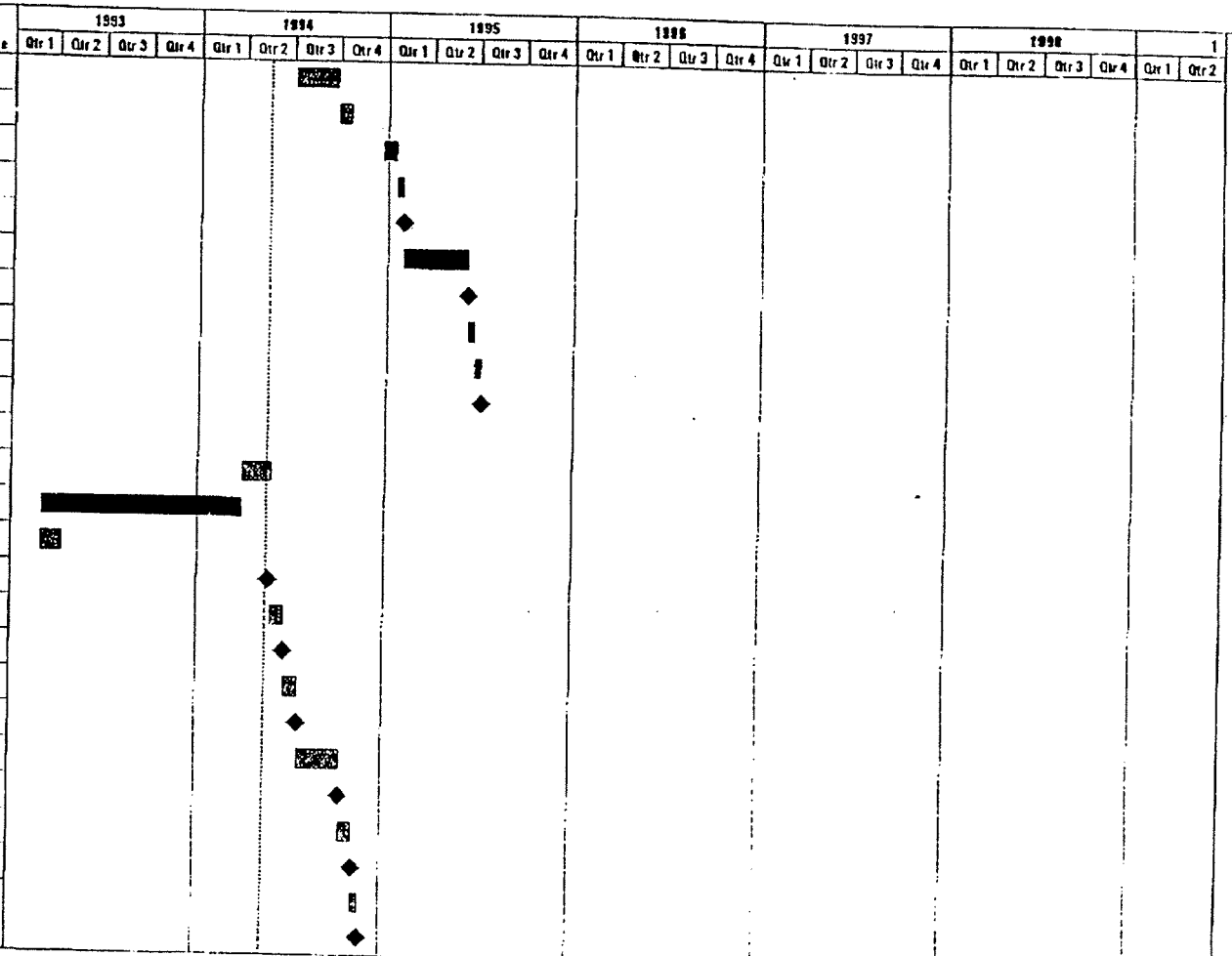


Project:
Date: 5/13/94 File: CABRAS4.MPP

Critical Noncritical Milestone

CABRAS UNIT 4 PERMITTING SCHEDULE May 13, 1994

ID	Name	WBS	Early Start	Early Finish	Duration	% Complete
26	Collect data for EIA	RWB	7/4/94	9/23/94	60d	0%
27	Analyze data for EIA	RWB	9/26/94	10/21/94	20d	0%
28	Draft revised EIA	RWB	12/21/94	1/17/95	20d	0%
29	Review by GPA	GPA	1/18/95	1/31/95	10d	0%
30	Submit draft EIA to GEPA	RWB	1/31/95	1/31/95	0d	0%
31	Review of draft	GEPA	2/1/95	6/6/95	80d	0%
32	Comments by GEPA	GEPA	6/6/95	6/6/95	0d	0%
33	Prepare final EIA	RWB	6/7/95	6/20/95	10d	0%
34	Review final EIA by GEPA	GEPA	6/21/95	7/4/95	10d	0%
35	Approval of EIA	GEPA	7/4/95	7/4/95	0d	0%
36	PSD		3/2/93	1/30/95	500d	0%
37	Process met data	GPA	3/28/94	5/23/94	40d	0%
38	Onsite met data collection	GPA	3/2/93	3/28/94	280d	0%
39	Initial PSD preparation	RWB	3/2/93	4/12/93	30d	0%
40	Decision on Plant Design Alts	4.4	5/19/94	5/19/94	0d	0%
41	Complete PSD application	RWB	5/24/94	6/20/94	20d	0%
42	Submit application to USEPA	RWB	6/20/94	6/20/94	0d	0%
43	Content review	USEPA	6/21/94	7/18/94	20d	0%
44	Completeness determination	USEPA	7/18/94	7/18/94	0d	0%
45	Tech. review	USEPA	7/19/94	10/10/94	60d	0%
46	Draft PSD	USEPA	10/10/94	10/10/94	0d	0%
47	Public comment period	USEPA	10/11/94	11/7/94	20d	0%
48	No comments	USEPA	11/7/94	11/7/94	0d	0%
49	Admin. prep of final PSD permit	USEPA	11/8/94	11/21/94	10d	0%
50	Final and effective PSD permit	USEPA	11/21/94	11/21/94	0d	0%

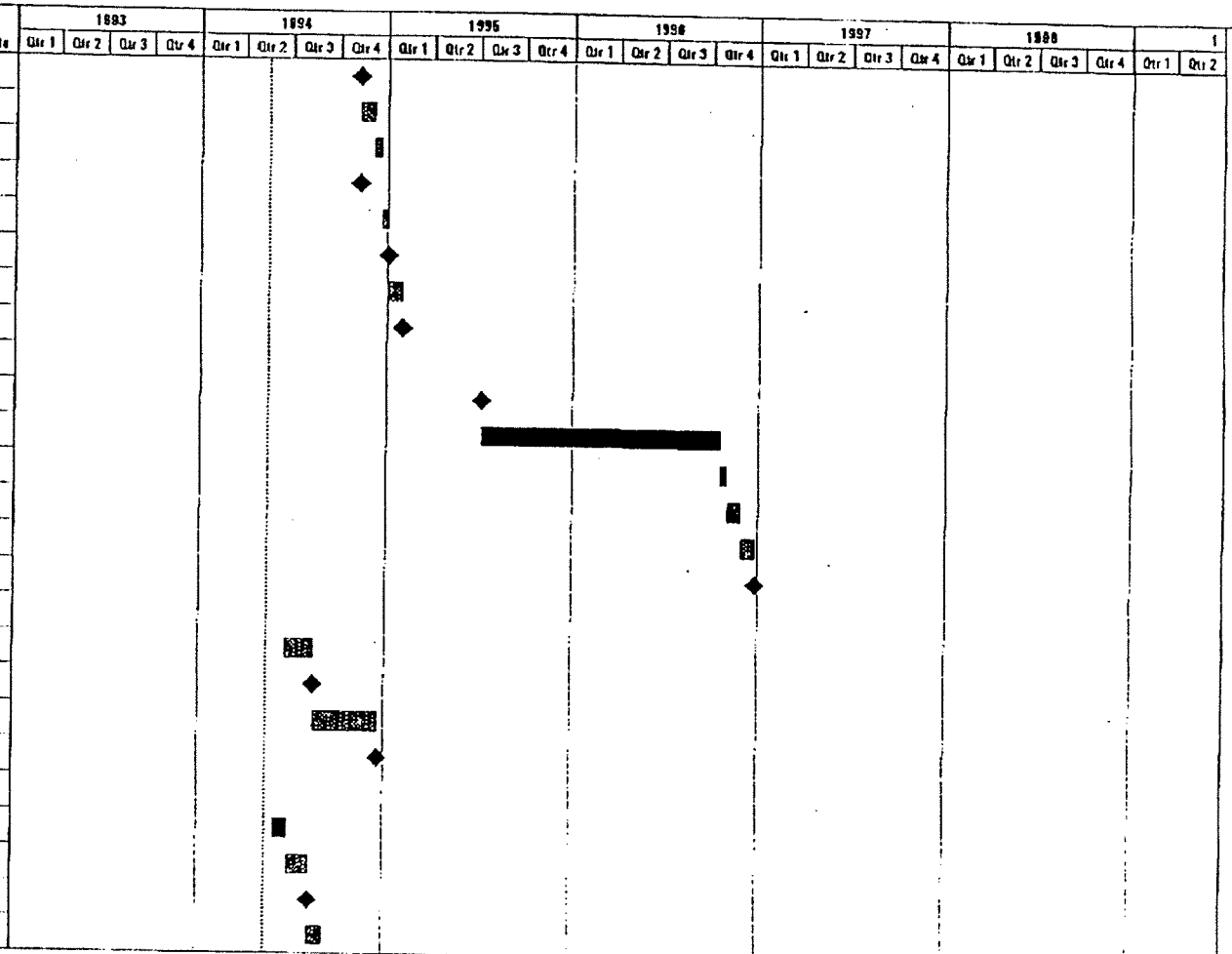


Project:
Date: 5/13/94 File: CABRAS4.MPP

Critical Noncritical Milestone

CABRAS UNIT 4 PERMITTING SCHEDULE May 13, 1994

ID	Name	WBS	Early Start	Early Finish	Duration	% Complete
51	Substantial comments	USEPA	11/7/94	11/7/94	0d	0%
52	Public hearing	USEPA	11/8/94	12/6/94	20d	0%
53	Comments considered	USEPA	12/6/94	12/19/94	10d	0%
54	comments, no hearing	USEPA	11/7/94	11/7/94	0d	0%
55	Admin. prep of final PSD permit	USEPA	12/20/94	1/2/95	10d	0%
56	Final PSD issued	USEPA	1/2/95	1/2/95	0d	0%
57	Appeal period	USEPA	1/3/95	1/30/95	20d	0%
58	Final and effective PSD permit issued	USEPA	1/30/95	1/30/95	0d	0%
59	Construction	GPA	7/4/95	12/25/98	988d	0%
60	Start construction of C #4	GPA	7/4/95	7/4/95	0d	0%
61	Construct balance of plant	GPA	7/5/95	10/16/98	338d	0%
62	Equipment checks	GPA	10/17/98	10/30/98	10d	0%
63	preliminary operation	GPA	10/31/98	11/27/98	20d	0%
64	Testing	GPA	11/28/98	12/25/98	20d	0%
65	Commercial operation	GPA	12/25/98	12/25/98	0d	0%
66	Air permit to construct		6/21/94	12/19/94	130d	0%
67	Prepare application	RWB	6/21/94	8/15/94	40d	0%
68	Submit application	RWB	8/15/94	8/15/94	0d	0%
69	Agency review	GEPA	8/16/94	12/19/94	90d	0%
70	Issue permit	GEPA	12/19/94	12/19/94	0d	0%
71	Local Construction Permits	7	6/1/94	7/4/95	285d	0%
72	Prepare erosion control plan	KHC	8/1/94	8/28/94	20d	0%
73	Review erosion control plan	GEPA	8/29/94	9/9/94	30d	0%
74	Approve erosion control plan permit	GEPA	8/9/94	8/9/94	0d	0%
75	Prepare clearing and grading app.	KHC	8/10/94	9/6/94	20d	0%

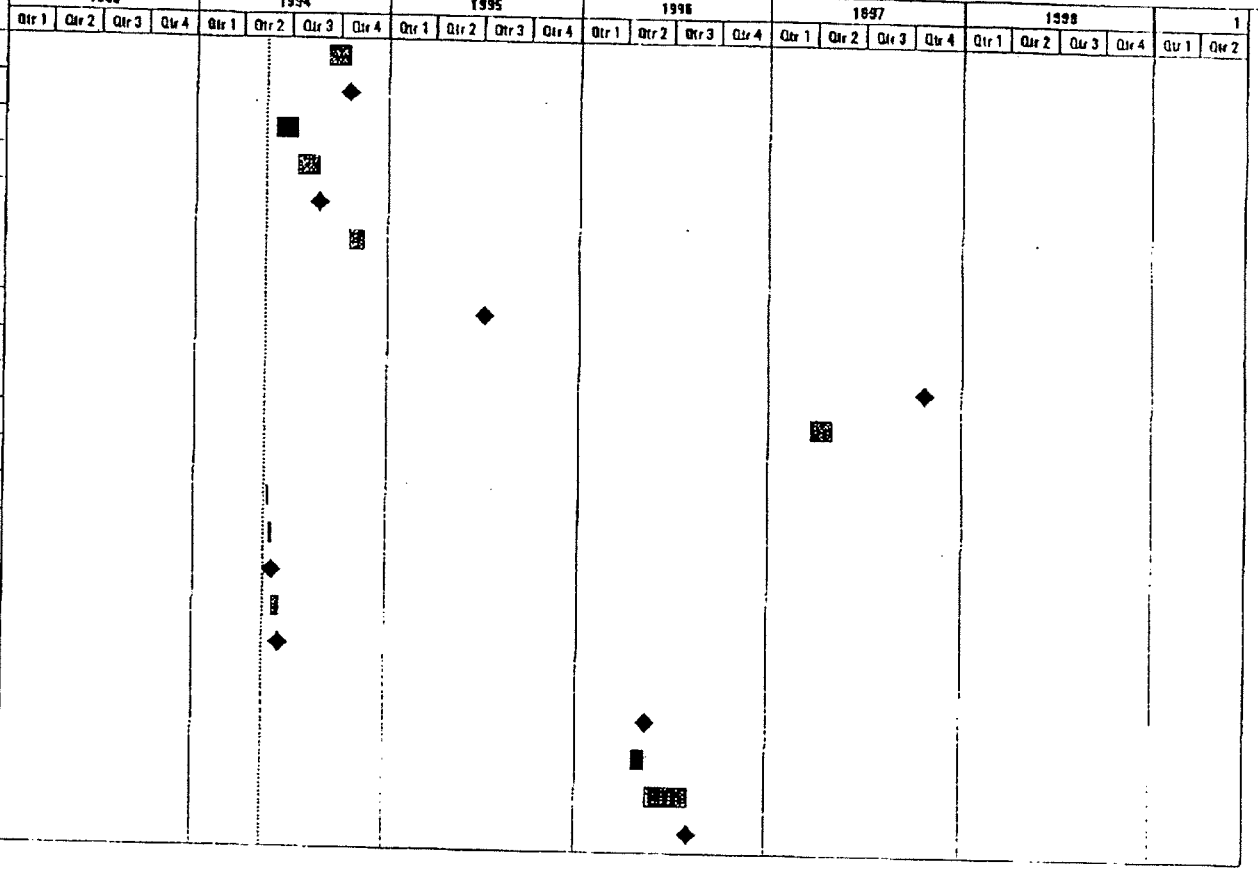


Project:
Date: 5/13/94 File: CABRASA.MPP

Critical Noncritical Milestone

CABRAS UNIT 4 PERMITTING SCHEDULE May 13, 1994

ID	Name	WBS	Early Start	Early Finish	Duration	% Complete
76	Review clearing and grading permit	GEPA	9/7/94	10/18/94	30d	0%
77	Issue clearing and grading permit	GEPA	10/18/94	10/18/94	0d	0%
78	Prepare env. protection plan	KHC	6/1/94	7/12/94	30d	0%
79	Review env. protection plan	GEPA	7/13/94	8/23/94	30d	0%
80	Approve env. protection plan	GEPA	8/23/94	8/23/94	0d	0%
81	Prepare building permit application	KHC	10/19/94	11/15/94	20d	0%
82	Review building permit application	DPW	11/16/94	11/16/94	1d	0%
83	Issue building permit	DPW	7/4/95	7/4/95	0d	0%
102	SPCC plan	GPA	3/20/97	10/23/97	156d	0%
103	Implement amended SPCC plan	GPA	10/23/97	10/23/97	0d	0%
104	Prepare SPCC plan	GPA	3/20/97	4/30/97	30d	0%
105	FAA	10	5/20/94	8/14/94	18d	0%
106	Verify need for permit	RWB	5/20/94	5/24/94	3d	0%
107	prepare application	RWB	5/25/94	5/31/94	5d	0%
108	submit to FAA	RWB	5/31/94	5/31/94	0d	0%
109	review by FAA	FAA	6/1/94	8/14/94	10d	0%
110	approval	FAA	8/14/94	8/14/94	0d	0%
111	Air permit to operate	USEPA	4/17/96	8/6/96	80d	0%
112	Application submitted to GEPA	USEPA	5/14/96	5/14/96	0d	0%
113	Prepare Application	GPA	4/17/96	5/14/96	20d	0%
114	Application reviewed by GEPA	USEPA	5/15/96	8/6/96	60d	0%
115	Permit approved	USEPA	8/6/96	8/6/96	0d	0%



Project:
Date: 5/13/94 File: CABRAS4.MPP

Critical Noncritical Milestone

22nd GUAM LEGISLATURE

TEMPORARY BUILDING, 155 HESLER STREET
AGANA, GUAM 96910

Senator Don Parkinson
Chairman, Committee on
Electrical Power and
Consumer Protection

Speaker Joe T. San Agustin
Acting-Chairman, Committee on
Economic and Agricultural
Development and Insurance

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WITNESS SIGN-IN SHEET

DAY/DATE OF PUBLIC HEARING: Wednesday, June 29, 1994

TIME: 10:30 a.m.

PLACE: Legislative Public Hearing Room, Guam Legislature, 155 Hesler Street, Agana.

RE: BILL NO. 1068 (At the request of the Governor): AN ACT TO APPROVE THE TERMS AND CONDITIONS OF THE ISSUANCE OF GUAM POWER AUTHORITY REVENUE BONDS. (A bill to approve the issuance of bonds in the amount of $85,000,000.00 to fund a 40 megawatt slow speed diesel generator.

NAME:	DEPT./AGENCY:	TESTIMONY ORAL/WRITTEN:	FOR/AGAINST:
Raymond C. Camacho	GPA	oral + written	for
Charlotte Cristobal	GEDA	Written	For

Exhibit "G"