December 21, 1982

John Nuveen & Company
209 South Lasalle Street
Chicago, Illinois
U.S.A. 60604

Attention: John Vincent

Dear Mr. Vincent:

Re: Susitna Annual Capital Expenditures Excluding Interest During Construction

Enclosed is the information you requested:

Year	Capital Expenditures (Nominal $Millions)	Capital Expenditures* (Real 1982 $Millions)
1985	403.7	318.6
1986	472.7	348.6
1987	479.7	330.6
1988	499.5	321.8
1989	938.3	564.9
1990	1,550.4	872.3
1991	1,247.1	655.8
1992	676.4	332.4
1993	333.1	153.0
		3,898.0

* Includes Real Capital Cost Escalations.

ACRES AMERICAN INCORPORATED

ACRES

December 17, 1982

Alaska Power Authority
334 West 5th Avenue
Suite 31
Anchorage, Alaska
99501

Attention: R. Benish

Dear Ray:

The attached ten-page assembly of text, tabulations and diagram was telecopied on December 17th to:

First Boston Corporation, New York, N.Y.	Attention: Steve McAleer
First SouthwestCompany, Dallas, Texas	Attention: Don Grimes
John Nuveen Company, Chicago, Illinois	Attention: Tony Dean

and to you in Anchorage. The follow-up copy delivered by express courier is to ensure that you have available readily readable tables for your further study.

Copies are being expressed to each of the above recipients of the telecopied material and we have been in telephone contact with them on December 17th. We would welcome early input, if possible - earlier than December 24th.

With kind regards and best wishes for the Christmas Season.

Yours sincerely,

J. G. Warnock
Vice President
Corporate Development

JGW:lb
attach:

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525

Contact Report

GROUP
DIVISION
REGIONAL OFFICE
DATE OF CONTACT 11:45 a.m. December 17th
CONTACT BY J. G. Warnock
TELEPHONE (212) 909-2817

CONTACT Steve McAleer
TITLE Public Finance Department
COMPANY First Boston Corporation
ADDRESS New York

CHECK OFF APPROPRIATE INFORMATION

TYPE OF CONTACT
- ☐ Repeat
- ☐ New
- ☐ Lead Only

PROSPECTS
- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ Write Off

FOLLOW-UP
- ☐ Yes
- ☐ No

Date
Who
Where
Who To See

DISTRIBUTION
BD File, ACS. Tor.

PROJECT DISCUSSED ☐ NO PROJECT DISCUSSED ☐

PROJECT TITLE
LOCATION
DESCRIPTION
CAPITAL COST
SCHEDULED TO BEGIN

SUMMARY OF DISCUSSION (Brief)

McAller telephoned to advise that he had received the telecopied memorandum and attachments. He was in the process of reviewing these with Terry McGuire who was present at the time of the phone call.

McAller had some general questions:

- Required confirmation that figures applied only to Watana phase .....(Alternatives)

- Will require clarification of the implications of the 3 phased approach

- Required clarification of energy pricing philosophy.....(The tracking of the "thermal cost alternative line" was explained and apparently understood)

- Requires copy of the Task II Reference Report (J. G. Warnock arranging)

- Were we providing for escalating costs of operation and maintanence. In a recent case, he had studied in Pacific N. W. a Public Utility District with 20 year old plant - probably Prest Cupids or Wanapun (Grant Casting PUD) were in Canada forecasting very substantially higher costs of maintaining the plant operable than had applied when bonds were issued. (Advised that both operating costs and capital replacements were escalated and that approaches had been to ensure that plant could be maintained in "pristine" condition throughout life)

- Questioned provisions necessary to make appropriations of $200 million p.a. or $150 million p.a. available. (Agreed that this was matter for legal/political consideration in connection with referendum procedure).

Form 9A

Contact Report

GROUP
DIVISION
REGIONAL OFFICE

CONTACT Steve McAller
TITLE Public Finance Department
COMPANY First Boston Corporation
ADDRESS New York

DATE OF CONTACT Dec. 17/82
CONTACT BY J. G. Warnock
TELEPHONE (212) 909-2817

CHECK OFF APPROPRIATE INFORMATION

TYPE OF CONTACT
- ☐ Repeat
- ☐ New
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PROSPECTS
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FOLLOW-UP
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- ☐ No

Date
Who
Where
Who To See

DISTRIBUTION
BD File, ACS. Tor.

PROJECT DISCUSSED ☐ NO PROJECT DISCUSSED ☐

PROJECT TITLE
LOCATION
DESCRIPTION
CAPITAL COST
SCHEDULED TO BEGIN

SUMMARY OF DISCUSSION (Brief)

- Questioned the make up of the $5 bn. and the $6.36 bn. totals in Table of Borrowing (Advised that this was amount to be funded by "GO" and Revenue Bonds).

- Has further questions line by line in financial analyses and would wish to go through tabulation with A. J. Merrett.

McAleer advised that telecopied material clear, but would welcome hard copy by courier.

0025

AGRES

DRAFT

cc a.g. Merett

OFFICE MEMORANDUM

TO: J. G. Warnock

Date: December 17, 1982

File: P6724

FROM: J. R. Plummer

cc:

SUBJECT: SUSITNA HYDROELECTRIC PROJECT
Financial - Real Escalation Costs

This is in response to a request dated December 9, 1982, from G. Warnock to J. Plummer for a report to review the Red Escalation of hydro electric construction capital costs expressed as deviations from the general inflation rate.

Data provided was as follows.

- Memorandum April 20, 1981, Diener to Warnock
- Letter November 24, 1981, Battelle to AAI
- Letter September 24, 1981, APA to AAI

The Ebasco/Battelle escalation rates showed a deviation of -0.1 percent to +2.0 percent from a general inflation rate of 7 percent. These rates were considered as possibly being too high. In addition it was questionable as to whether or not potential future productivity benefits had been included.

The task assigned to Niagara Falls/Buffalo was as follows.

1 - Review available historical data and establish a base on which to make reasonable predictions to early 1990's.

2 - Develop escalation indices appropriate for the hydro-electric construction indices.

3 - With assistance from Economics and Planning, Toronto determine a likely future cost escalation scenerio appropriate particularly to State of Alaska.

Sources of information checked were as follows.

- ENR
- Handy Whitman
- US Department of Labor
- US Bureau of Reclamation

1 - COMPARISON OF OVERALL HYDRO CAPITAL COSTS REAL ESCALATION TO THE CONSUMER PRICE INDEX

1.1 - Data and Assumtions

Overall hydro construction cost escalation statistics were developed from Handy Whitman and the USBR and plotted to 1982. The ENR statistics on the overall hydro costs escalation are derived from USBR, so ENR was not employed.

From USBR the figures cover the 1971-1982 period and apply to the western and pacific regions of the United States. Handy Whitman's indices were chosen for the US pacific region and cover the 1913-1982 period.

The US Consumer Price Index was assumed to identify with the General Price Inflation and its projections, as the term (as well as the figure) is used in the Susitna financial analysis. The CPI was taken from the US Department of Labor statistics and is the US average, available for the 1913-1982 period.

SUSITNA CAPITAL COST BREAKDOWN

Types of Work	Watana (x$1,000,000)	Devil Canyon (x$1,000,000)	Percent of Total
Dams and Reservoirs	1,813	378*	66
Structures and Improvements	78	394*	14
Electromechanics	100	68	5
Transmission	391	91	15
Total			100

(Contingencies, Contractor's Overhead and Engineering/ Management excluded).

*Half of the cost of dams (arch) is taken in structures.

Given the composition of the Susitna capital cost as shown below, it was tried initially to develop a hydro cost index in which component hydro work indices as given by Whitman and USBR, were weighted in proportion to the actual Susitna percentages. It was seen however, that the so developed index almost identifies completely with the overall hydro indices given directly in the above sources (indication of Susitna's typical costs breakdown). Consequently the overall hydro indices were directly used.

A third way of developing a composite overall hydro construction capital costs escalation indices, given by USBR, Whitman and the USDL, in proportion to the resource mix, as used by Susitna. It was felt however, that within the time constraints of the present report preparation no appreciably better (if not worse) accuracy could have been obtained, nor in interpreting the past neither in projecting the future. Consequently, review of the construction resources cost escalation past data, is used qualitatively only in this report.

1.2 - Results

The object of the exercise was to follow the development of both the CPI and the overall Hydro construction capital cost escalation index (HCI) through the years, detect any deviations between them in both annual as well as cumulative rate of change and identify any systematic trend which would permit future projections. The results are summarized as follows. (see Table of Comparison - Annex 1).

Period		A (%)	B (%)
1929 to 1932	Depression	-0.7	+1.2
1933 to 1939		1.2	+2.4
1940 to 1947	Work War II	6.9	+0.5
1948 to 1967		1.7	+2.3
1968 to 1972		4.4	+2.4
1973 to 1976	The Oil Crisis	8.7	+3.1
1977 to 1982		9.6	-1.4

A - Average yearly rate of inflation (CPI)
B - Real Hydro costs escalation over the general inflation (average yearly).

Examination of the curves shown in Annex 2 and Annex 3 shows a similar pattern of deviation between the curves identified as Number 1 and Number 2. Annex 4 is information received from the Economics Division of Ontario Hydro. This information furhter confirms the information presented in Annexes numbered 1 to 3 inclusive.

(a) During periods of stability of the economy (small variation of the inflation rate in the vicinity of low values), hydro costs have maintained and steady real rate of increase at 2.3 to 2.4 points over and above the inflation rate.

(b) During the depression and the Second World War, hydro cost's real escalation was reduced.

(c) During the oil crisis, the real escalation rate of hydro increased in apparent response to the dependence of the industry to fuel prices. The period following the oil crisis whos a reversal of the rates trend, well into negative values. If the allowance of the 1977 to 1980 period was made, as a make-up time for internal adjustments in the economy, the overall 1973 to 1980 period would average close enough to a hydro real escalation rate of again around ~~2.0~~ 2.0 percent positive.

(d) The downward trend of the rate from 1979 on, in combination with Point C above (on the "adjusting" nature of the period) could justify a peaks-and-valleys forecast pattern value into the eighties, until the rate stability itself at the value of +2.0 to+2.5 percent, all other things considered equal. This remark could justify Ebasco's figures variation pattern, if not their absolute value.

(e) Subject to submission of the above points (a) through (d) to the expert opinion of economists, reservations should be made as to the rates changes pattern if past experience is interpreted through different groupings of the yearly rate.

(f) Finally, though not constituting an object of the present report, the general inflation rate assumed in the Susitna financial analysis scenarios (7 percent) does not seem to tie with the recent experience of an average rate of about 9.4 percent from 1973 to today (see also ~~Appendix B~~ ANNEX 4 (to come)).

1.3 - Remarks

In the understanding that a Real Escalation rate on the hydro construction capital costs reflects an external (or market) influence, on the industry's product prices, past history in the US shows that the hydro industry operated on the average almost continuously in conditions at a "seller's market". Whether Susitna will follow the same pattern i.e. maintaining a positive real escalation rate, would depend primarily on the State of Alaska's economic development plans for the next fifty years. Otherwise stated, if Alaska plans for high energy demands conditions in the future, they should expect positive real escalation (i.e. value increase) of the related energy production capital costs.

In regard to future potential productivity improvements, discussion amongst our senior estimators indicated that in general, past history in recent years lead to the belief that productivity improvements are generally lost to changing and more demanding labor. The US Department of Labor shows a manufacturing productivity improvement of approximately 2 percent per annum. When telephoned, the US Department of Labor had calculated a corresponding decrease of 2 percent for the construction industry. This figure was not published due to a lack of confidence in the figure. The only other information discovered was an extract taken from the October 1982 Economic Outlook from Ontario Hydro shown as Annex 5. This extract shows a productivity growth rate of 1.5 percent to 2.0 percent. In conclusion it appears that a small productivity improvement may be anticipated. However, we feel that such improvement is either already included in Real Escalation forecasts or is greatly outweighed by other factors to be a matter of considerable consideration.

1.4 - Conclusions

The Real Escalation rate of the capital cost of the Susitna Project is likely to follow an oscillating pattern through 1982 to 1990 with periods of three to five years, and amplitude at -3 percent to +3 percent until it stabilizes itself around the value +2.0 percent. This value exceeds by 1 percent those figures put forward by Ebasco Battelle. It is noted that Ebasco assumed the general inflation rate to be 7 percent whereas the calculations of this memo assume the general inflation rate to be the consumer price index. We have made no attempt to assess the consumer price index.

We are in general agreement with the Ebasco Real Escalation rate curve slopes; however, we feel that the actual Real Escalation rates could be slightly higher than the Ebasco rates.

Please note
This memo has not been proof read.

JR Cumbelow

Annex 1

ANNEX 1

Calculations

SUBJECT:

WHITMAN HYDRO INDEX (PACIFIC) VERSUS THE CONSUMER PRICE INDEX [COMMON 100 BASE : 1967]

JOB NUMBER
FILE NUMBER
SHEET ___ of ___
BY ___ DATE ___
APP ___ DATE ___

	CPI			HCI (Whitm.)			Rate Real Esc. %	
	CPI INDEX	Yearly % Rate	Avg. Cum. (%) Rate	HCI	Yearly % Rate	Avg. Cum. Rate %	Δ annual	Δ cum.
1915	30	10.0		13	23.1		+11.9	
6	33	15.2		16	25.0		+ 8.5	
7	38	18.4		20	20.0		+ 1.4	
8	45	15.6		24	0.0		-13.5	
9	52	15.4		24	8.3		- 6.2	
1920	60	-10.0		26	- 7.7		+ 2.6	
1	54	- 8.0	4.2	24	- 4.2	4.8	+4.1	+0.6
2	50	2.0		23	0.0		- 2.0	
3	51	0.0		23	0.0		±0.0	
4	51	3.9		23	0.0		- 3.8	
5	53	0.0		23	0.0		±0.0	
6	53	-1.9		23	0.0		+ 1.9	
7	52	-1.9		23	0.0		+ 1.9	
8	51	0.0		23	4.3		+ 4.3	
9	51	-2.0		24	-33.3		-68.0	
1930	50	- 8.0	- 7.0	16	31.3	-5.9	+42.7	+1.2
1	46	-10.9		21	- 4.8		+ 6.8	
2	41	- 4.9		20	5.0		+10.4	
3	39	2.6		21	9.5		+ 6.7	
4	40	2.5		23	0.8		- 2.4	
5	41	2.9		23	0.0		- 2.5	
6	42	2.4	+1.2	23	4.3	3.6	+ 1.9	+2.4
7	43	-2.3		24	8.3		+10.8	
8	42	0.0		26	0.0		± 0.0	
9	42	0.0		26	0.0		± 0.0	
1940	42	4.8		26	3.8		- 1.0	
1	44	11.4		27	11.1		± 0.0	

	CPI			HCI			Rate Real Esc. %	
	CP INDEX	Yearly % Rate	Avg. Cum. % Rate	HCI	Yearly % Rate	Avg. Cum. % Rate	Δ annual	Δ cum.
1942	49	6.1		30	0.0		- 6.5	
3	52	1.9		30	0.0		- 1.9	
4	53	1.9	6.9	30	3.3	7.5	+ 1.4	+0.5
5	54	9.3		31	16.1		+6.2	
6	59	13.6		36	19.4		+5.1	
7	67	7.5		43	9.3		+1.7	
8	72	-1.4		47	4.3		+5.8	
9	71	1.4		49	2.0		+0.6	
1950	72	8.3		50	8.0		- 0.3	
1	78	2.6		54	3.7		+1.1	
2	80	0.0		56	7.1		+7.1	
3	80	1.3		60	5.0		+3.7	
4	81	-1.2		63	4.8		+6.0	
5	80	1.3		66	6.1		+4.7	
6	81	3.7		70	5.7		+1.9	
7	84	3.6	1.74% p.a.	74	4.1	4.05% p.a.	+0.5	+2.3% p.a.
8	87	0.0		77	3.9		+ 3.9	
9	87	2.3		80	3.8		+ 1.5	
1960	89	1.1		83	1.2		+0.1	
1	90	1.1		84	0.00		-1.1	
2	91	1.1		84	2.4		+ 1.3	
3	92	1.1		86	3.5		+ 2.4	
4	93	2.2		89	1.1		- 1.1	
5	95	2.1		90	6.7		+ 4.5	
6	97	3.1		96	4.2		+ 1.1	
7	103	4.0		100	3.0		- 1.0	
8	104	5.8		103	6.8		+0.9	

	CPI			HCI			Rate Real Esc. %	
	CPI	Yearly % Rate	Avg. Cum. % Rate	HCI	Yearly % Rate	Avg. Cum. % Rate	Δ annual	Δ cum.
1969	110	5.5		109	3.7		-1.7	
1970	116	4.3	+4.35	113	8.8	+6.86	+4.3	+2.4
1	121	3.3		123	8.1		+4.6	
2	125	6.4		133	7.5		+ 1.0	
3	133	11.3		143	18.2		+6.2	
4	148	8.8	+8.7	169	14.2	+12.0	+5.0	+3.1
5	161	6.2		193	4.1		-2.0	
6	171	6.4		201	6.5		+0.1	
7	182	7.1		214	9.3		+2.1	
8	195	11.3		234	10.7		-0.5	
9	217	13.8	9.6	259	9.7	8.1	-3.6	-1.4
1980	247	10.1		284	6.7		-3.1	
1	272	5.9		303	4.3		-1.5	
2	288			316				

GQ.04.01 Form 148A

ANNEX 2

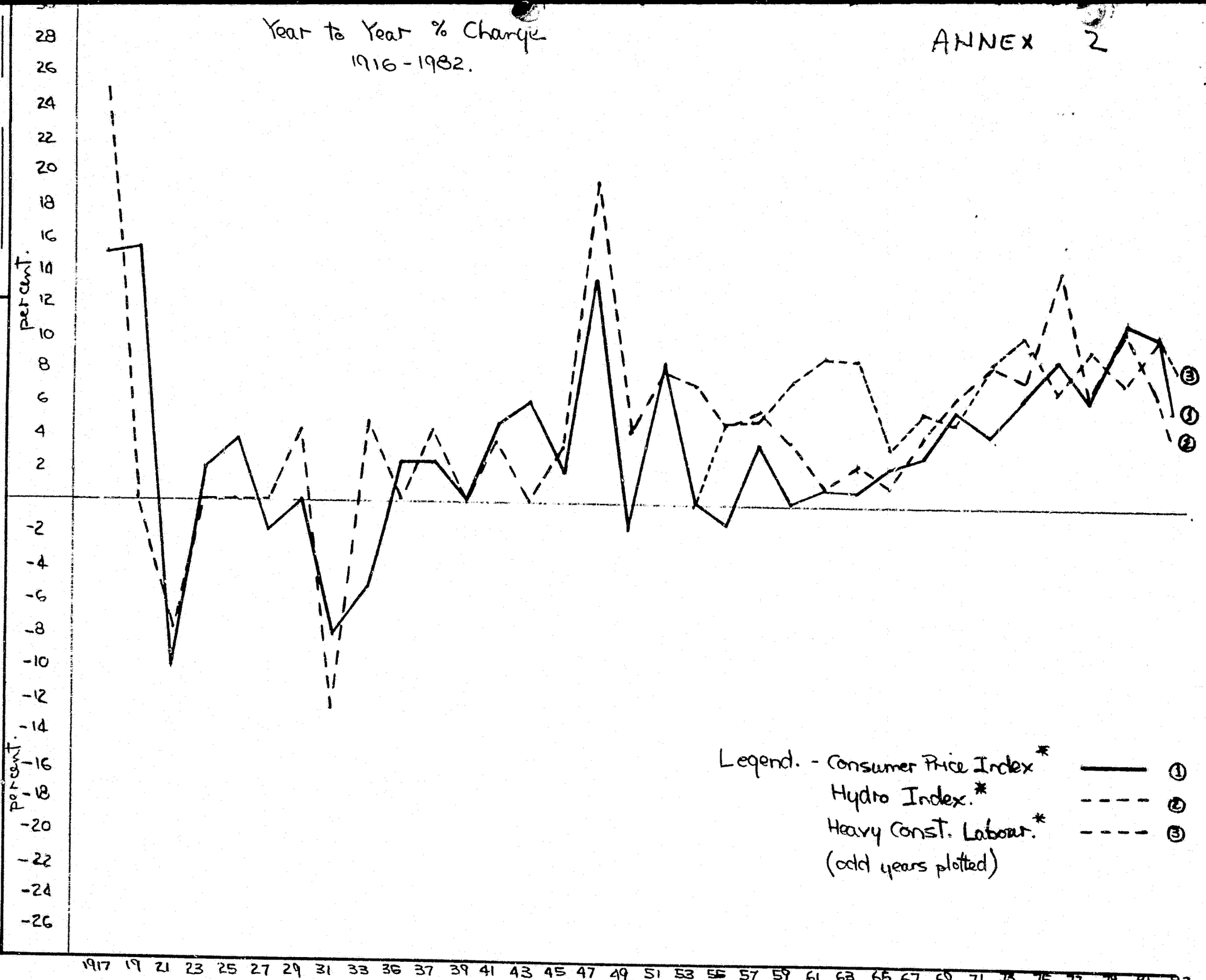
Year to Year % Change
1916 - 1982.

ANNEX 2

Calculations

SUBJECT: Whitman Hydro Index (Pacific) versus the Consumer Price Index (U.S)

JOB NUMBER P5700.81
FILE NUMBER
SHEET 1 OF 1
BY J.E. Hunter DATE 17/12/82
APP DATE



FORM NO. 152 REV 1

* source - Consumer Price Index - U.S Department of Commerce, Hardy Whitman Hydro Index (Pacific)

Calculations

By JE Hunter Date 17/12/82 Project No. P6724.00

Checked ____ Date ____ Calculation No. ____

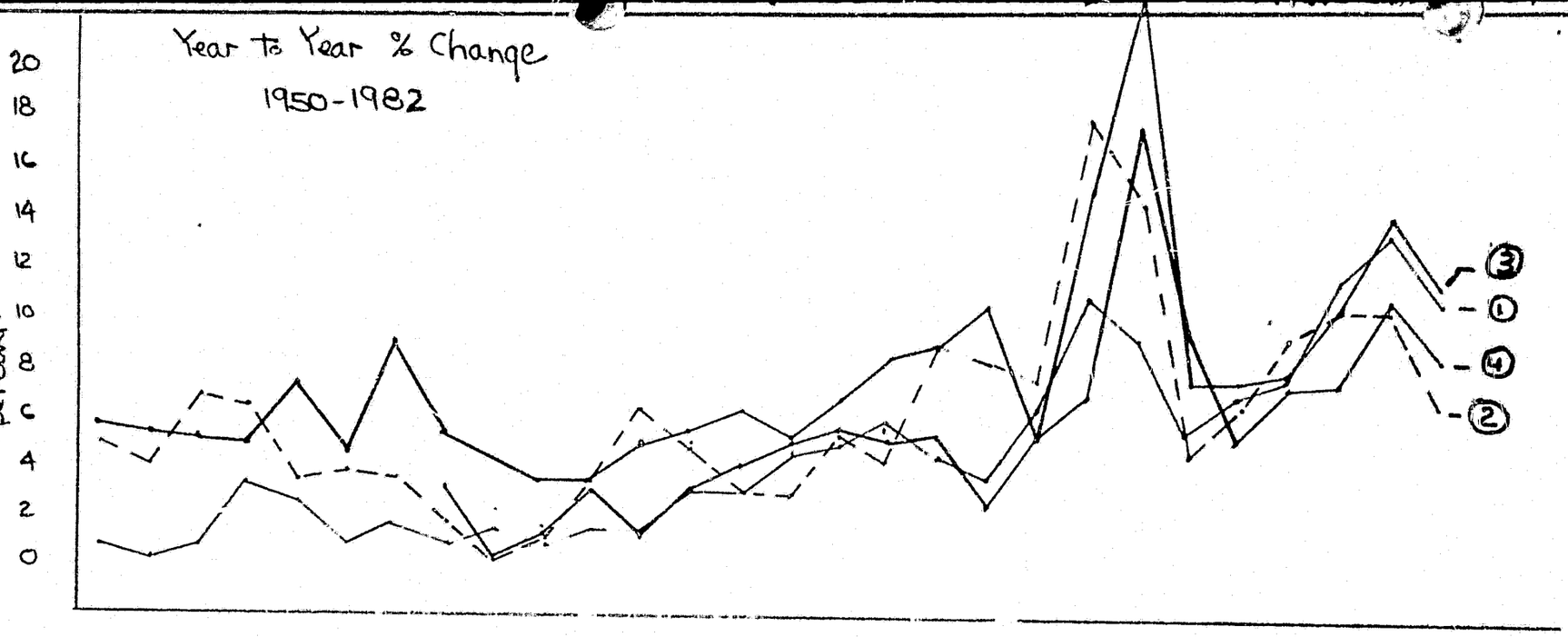
SUBJECT Whitman Hydro Index (Pacific) versus the Consumer Price Index. Page 1 of 1

ANNEX 3

	By	Checked
Rev		

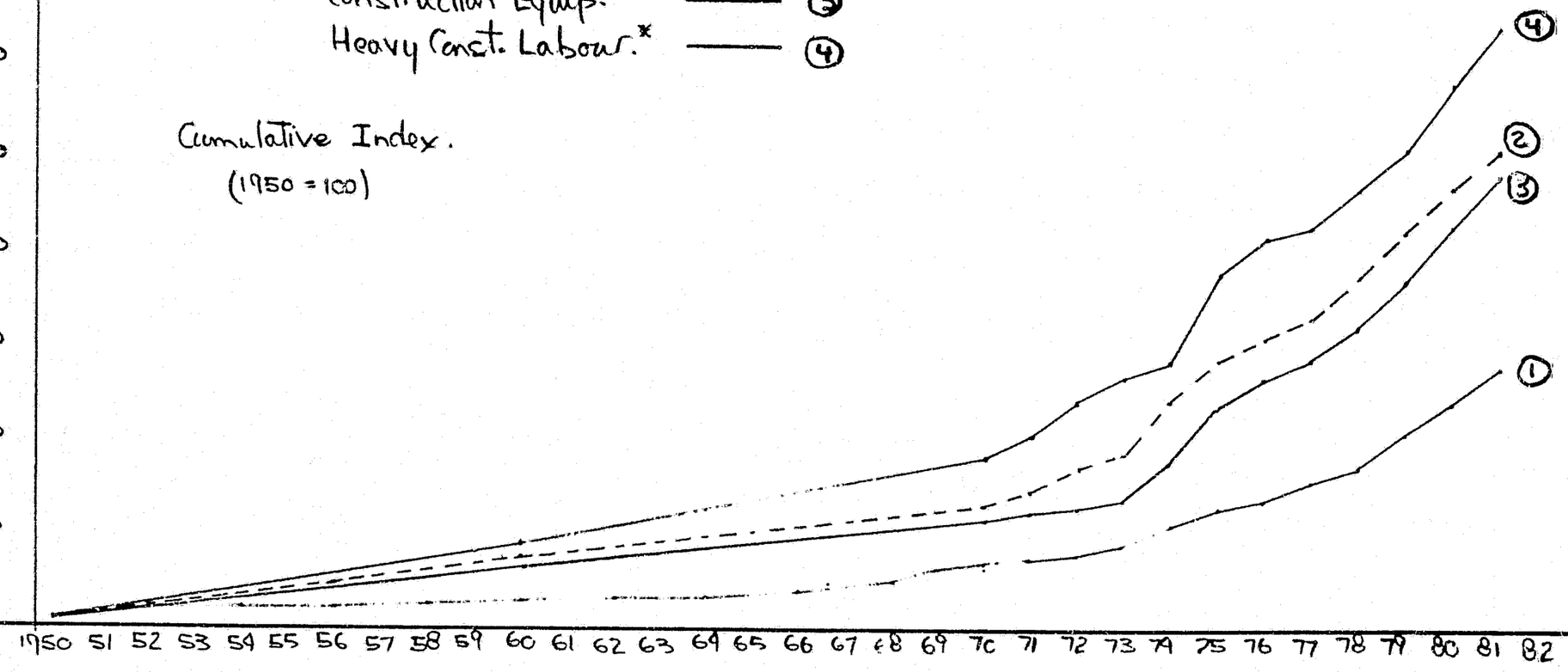
ACRES

Year to Year % Change
1950-1982



Legend. Consumer Price Index* —— ①
Hydro.* ---- ②
Construction Equip.* —— ③
Heavy Const. Labour.* —— ④

Cumulative Index.
(1950 = 100)



* source. Consumer Price Index - U.S Department of Commerce, Hardy Whitman Hydro Index (Pacific)

60.04.03 Form 148B

ANNEX 4

ECONOMIC FORECASTING SERIES

Effective Date: October 1982
Cancels Issue: October 1981
Information: 6845

1.0 COMPOSITE CONSTRUCTION INDEXES
- LABOUR AND MATERIAL COMPOSITIES

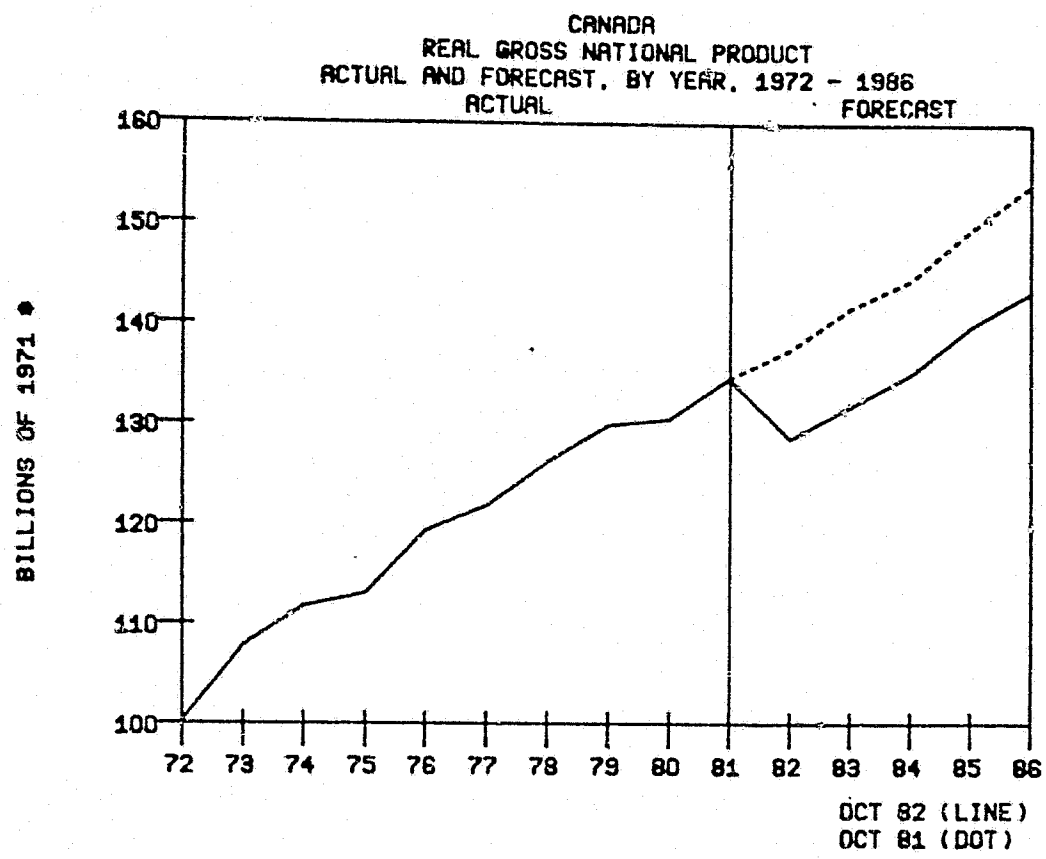
YEAR	GENERATION PROJECT CONSTRUCTION						TRANSMISSION SYSTEMS		REGION CONSTRUCTION		YEAR
	HYDRAULIC		FOSSIL		NUCLEAR(+1/2 FUEL)						
	INDEX	% Δ	INDEX	% Δ	INDEX	% Δ	INDEX	% Δ	INDEX	% Δ	
		Δ TO INFLATION ↓									
1981	100.0		100.0		100.0		100.0		100.0		1981
1982	109.7	9.7+2.4	109.8	9.8	110.1	10.1	110.0	10.0	112.3	12.3	1982
1983	121.4	10.7+3.2	121.0	10.2	121.4	10.3	120.1	9.2	122.0	8.6	1983
1984	132.6	9.2+0.2	131.9	9.0	132.9	9.5	130.9	9.0	133.0	9.0	1984
1985	146.5	10.5+0.5	145.7	10.5	147.5	11.0	144.6	10.5	146.3	10.0	1985
1986	161.2	10.0+1.0	160.3	10.0	162.3	10.0	158.3	9.5	160.9	10.0	1986
1982-1986		10.2+1.2		9.9		10.2		9.6		10.0	1982-1986
1987-1991		10.0+1.0		10.0		10.0		9.5		9.5	1987-1991
1992-1996		9.5		9.0		9.0		9.0		9.0	1992-1996
1997-2001		8.5		8.5		8.5		8.5		8.5	1997-2001
2002-2021		7.5		7.5		7.5		7.5		7.5	2002-2021

data base and composition: Weighting as supplied by Generation Projects Division, Transmission Systems Division, and Distribution and Marketing Division have been applied to the appropriate indexes contained in these sheets.

CAUTION: Important notes concerning the above data follow these tables.

Source
Ontario Hydro Oct 1982
"Economic Forecasting Series"

ANNEX 5



In this forecast it is presumed that major energy projects of such types as Cold Lake, Alsands, and the Alaska Highway Natural Gas Pipeline will be delayed at least until the beginning of the 1990's.

The long-run growth pattern is essentially derived from an assumed labour productivity growth rate of about 1.5% to 2.0% and a labour force growth rate of 0.5% to 1.0%.

The assumptions underlying a resurgence in labour productivity relative to today relate to:

- old capital stock being replaced with efficient equipment;
- technological advancements;
- a more mature and experienced work force; and
- a more efficient and leaner economy as a result of rationalizing inefficient and unproductive businesses during the severe recessionary conditions of the early 1980's.

ANNEX 5

Source
Ontario Hydro Oct 1982
"Economic Outlook"

0 0 2 5 0

ACRES BUF

ACRES TOR

DECEMBER 17, 1982

make copies of cc.

ATTN: J. PLUMMER
BUFFALO OFFICE

Oct
Dec 17/82

CC: D. MCKAY
D. O'ROURKE

RE: P6724

WE DISCUSSED POSSIBLE REVIEW CHURCHILL FALLS PROJECT ESCALATION STUDY COMPLETED IN 1968 WHICH APPLIED COST/PRICE TRENDS TO INDIVIDUAL ELEMENTS OF THE PROJECT CONSTRUCTION COST ESTIMATE AND ASSESSED THE PRUDENT PROVISION FOR INFLATIONARY/ESCALATION EFFECT AS THAT AMOUNT COMPUTED BY APPLYING 4.5 0/0 ANNUAL COMPOUNDED RATE (ASSESSED ON A QUARTERLY BASIS) TO THE ESTIMATED PROJECT EXPENDITURES OVER SCHEDULE WHICH ORIGINALLY SPANNED 9 YEARS FROM SPRING 1967 TO 1976 BUT IN PRACTICE SPANNED SPRING 1967 TO END 1974.

ESCALATION INDEX WAS ASSESSED BY PROJECTING ANNUAL PERCENTAGE INCREASES IN MATERIALS

BUILDING MATERIALS	(WEIGHTING IN ESTIMATE)	22 0/0
STEEL		14 0/0
TURBINES AND GENERATORS		12 0/0
OTHER ELECTRICAL AND MECHANICAL		17 0/0
CONTRACTORY EQUIPMENT		28 0/0
PETROLEUM PRODUCTS		7 0/0

WE ARE TELECOPYING SUMMARY TABLE WHICH WAS USED IN ARRIVING AT CONCLUSIONS:

THE PROVISION FOR ESCALATION ARRIVED AT IN 1967/68 PROVED TO BE SUFFICIENT TO MEET ACTUAL COST INCREASE TRENDS DURING CONSTRUCTION.

YOU MAY BE ABLE TO DETERMINE APPLICABLE CONSTRUCTION COST ESCALATION RATE RELATED TO CPI FOR THE 1967-1974 PERIOD.

J. G. WARNOCK

•

ACRES BUF

ACRES TOR

TABLE 13

CONSTRUCTION COST ESCALATION INDICES AND WEIGHTINGS

	1967		1968		1969		1970	
	Weight	*Index*	*Weight*	*Index*	*Weight*	*Index*	*Weight*	*Index*
Materials and Equipment	65	3.0	75	3.0	66	2.7	68	2.5
Labour	27	5.2	10	9.9	26	9.7	25	14.0
Management and Engineering ..	8	7.0	6	7.0	8	7.0	7	7.0
Weighted Average		3.9		4.6		4.9		5.7
Weighted Average	100	103.9		108.7		114.0		120.5
.5 per cent Index Compounded Annually	100	104.5		109.2		114.1		119.2

	1971		1972		1973		1974	
	Weight	*Index*	*Weight*	*Index*	*Weight*	*Index*	*Weight*	*Index*
Materials and Equipment	73	2.5	82	2.8	85	2.8	83	2.8
Labour	21	12.8	14	9.0	12	9.6	14	8.1
Management and Engineering ..	6	7.0	4	7.0	3	7.0	3	7.0
Weighted Average		4.9		3.8		3.7		3.7
Weighted Average		126.4		131.2		136.0		141.0
4.5 per cent Index Compounded Annually		124.6		130.2		136.1		142.2

December 16, 1982.

To: Mr. R. Benish
Alaskan Power Authority

c.c. Mr. H. Noonan, Steve McAleer
Tony Dean, D. Grimes

Subject: ANNUAL CONTRIBUTION FUNDING (ACF) FOR SUSITNA WITH GO AND PRIORITY REVENUE BONDS

Outline

This Susitna Financing Analysis considers the financial/ borrowing requirements and cost of power for the cases in which the State appropriates in Case A $200M per annum starting in 1984 and increasing in line with inflation for the nine years to 1993 and in Case B $150M per annum beginning in 1984 and increasing with inflation until the year 1993. In both cases the balance of the required capital of expenditures are assumed to be provided by GO Bonds, and 'Priority' Revenue bonds as described below.

In both cases it is assumed that the cost of power is restricted to the cost of power that would arise each year under the best thermal option as described in Acres Task 11 Reference Report. This cost of power is 147 mils/kwh in 1994 (first normal year of Watana). (This translates at the assumed 7 percent continuing rate of inflation to a cost of power of 63 mils in 1982 prices). Insofar as this creates deficits for the project after meeting interest and debt repayments the deficit is assumed to be met by borrowing. The cost of power from Watana therefore "climbs up the ceiling" set by the year by year cost of power from the best thermal option (see attached diagram) until it reaches th point at which it is meeting the 1.1 coverage requirement when the outstanding debt is assumed to be funded into 35 year level payment bonds like the rest of the bond financing.

Please also note that the results are only provisional and generally conservative. We will fine tune the numbers for the final versions. In particular we are reviewing the whole issue of the large real escalation built into capital costs (see my letter of December 13).

Cost of Power

The resulting Cost of Power under schemes A and B assuming a 10 percent rate of interest are given in nominal and 1982 dollars in Table 1 and shown graphically on the attachment. In Case A the price stabilizes (i.e. 1.1 times cover is met) at 188 mils (71 mils in 1982 dollars and in Case B at 220 mils (82 mils in 1982 dollars). In both cases price stability (except for O.M. escalation, etc.) is in 1996.

The issue for consideration is whether these levels of cost would be politically acceptable in the context of the February revision of the Task 11 Reference Report. Our assessment is that the 71 mils resulting from the $200M annual contribution certainly ought to be acceptable since it is still below the production costs of additional power in the East coast utilities even today and offers virtually level power costs thereafter in nominal dollar and rapidly falling real costs.

Borrowing Requirements

The Borrowing Requirements of alternatives A and B are also set out in Table 1 in nominal and real dollars. I suggest we consider the borrowing in three phases.

It must be an objective of the debt financing plan to minimise the burden on the credit of the State. The borrowing for the first phase of construction (first phase borrowing) up to year 1987 immediately prior to commencing major work on the dam itself would have to be on 'GO' Bonds having regard to the possibility that the project could, without excessive economic cost (see below), still be aborted up to that time.

The next stage of financing can be seen as the committment phase taking the project through much of the dam construction. At the end of this phase the ultimate completion of the project is certain (barring natural calamities). It must be expected that much or all of this phase will need to be financed by 'GO' or 'moral obligation' indebtedness.

All or large part of the final phase financing should however be possible by Revenue Bonds depending on the power contracts established by that date and level of financial security which they offer.

A possibility would be to offer these bonds on the basis of priority in revenues to the 'GO' bonds. The security of the latter is the State of Alaska and would therefore not in any material manner be diminished by such priority being afforded the revenue bonds. But it should substantially increase the Revenue Bond component of overall financing. Even on the extremely pessimistic assumption that demand or the price of power halves the projected revenues, this would still provide debt service at 10 percent interest for $ 2.4 bn of Revenue bonds.

Hence with such priority and a State guarantee of completion (which could be delayed until part way through the committment phase) upwards of $2.4 bn (47 percent) at least of total borrowing should be obtainable from Revenue Bonds. This priority status would increase the risk to the GO Bonds but this may still be politically acceptable and preferable to loading the State's indebtedness with more GO bonds on a double-barrelled guarantee basis.

3 OF 10

We have requested the earliest possible response from First Boston, Nuveen and First Southwest on their assessment on any problems which may arise in planning bond issues of the magnitude implied by alternatives A and B, and a view on the proportion of the borrowing which might be met by revenue bonds.

Phase Financing and Problems at Referendum

An issue which must be considered in assessing the practicality of any financing scheme is the extent to which, having regard to the magnitudes involved, it would gain political support under the current referendum legislation. A basic problem is that with construction extending to a decade ahead the total sums involved expressed in nominal dollars may look unacceptably high causing the project to fail at referendum.

Two procedures which might minimise the problem are as follows:

First it is our understanding from the Power Authority's legal advisors that it should be possible to state the $200M per annum in "real" dollars rather than ever increasing nominal amounts. A determination of the appropriate wording and possiblities should be obtained if either of the above possibilities go forward for final consideration.

The second possibility is that the Power Authority does not seek total project financing in a single referendum but instead seeks successive phases of financing at two or more referenda. This could produce the First Phase referendum on the basis of the $911 M State appropriation ($200M p.a. in real terms) and $466M of borrowing (both in nominal dollars) required to take the project up to the point at which the major and irreversible commitment would be required in the year 1987. This procedure might have much greater chances of success a referendum and the project might automatically generate political momentum once commenced that would carry it through the referendum required for Committment Phase of financing.

Against this must be set the risk that this phase would fail at a second state referendum and project work would then be suspended. This might be an acceptable risk however particularly since this outcome is always possible irrespective of any consent to total financing at any prior referendum if state finances are inadequate to meet the sums appropriated or the borrowing sanctioned. Also the work scheduling could be arranged such that most of the expenditure would be for works that were still useful when work resumed at a later date.

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Subsequent Schemes Being Considered

In the following week, schemes variant on the above will be run depending on comment from your banking advisors.

The above schemes will also be rerun to take account of our presently underway revision of real escalation.

Other possibilities include 100% debt and deficit subsidy financing.

Urgency

If the deadline of end year for agreement on viable options is to be reached, any commentary must reach us by December 24th. Please telephone (416-595-2048) telex 06-217815 or telecopy 2127. Alternatively during out of office hours call 416-598-0173.

A. J. Merrett

BORROWING REQUIREMENTS

$ Million

	Case A ($200M)		Case B ($150M)	
	Nominal	Real (1982)	Nominal	Real (1982)
1985	-	-	78.2	61.7
1986	210.4	155.1	308.8	227.7
1987	255.7	176.3	334.6	230.6
1988	283.9	182.8	375.1	241.6
1989	732.8	441.2	837.6	504.2
1990	1398.6	786.9	1518.7	854.5
1991	1214.0	638.4	1351.5	710.6
1992	742.3	364.8	899.2	441.9
1993	101.1	46.4	279.5	128.4
1994	78.1	33.5	186.4	80.0
1995	71.5	28.7	190.6	76.5
TOTAL	5088.4	2854.1	6360.2	3557.8

Deficits on Operation *

Cost of Power	1993	1994	1995	1996	1997	mills
Nominal						
Case A	111	147	153	188	189	
Case B	111	147	153	220	226	
Real						
Case A	51	63	61	71	66	
Case B	51	63	61	82	79	

* Excludes working capital requirements and possible funding of the two years of deficits.

TABLE 2 - page 1

DATA10L2 WATANA (ON LINE 1993)-$200M P.A. STATE FUNDS-INFLATION 7%-INTEREST 10%-CAPCOST $3.647 BN 15-DEC-82

CASH FLOW SUMMARY
===($MILLION)====

		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
73	ENERGY GWH	0	0	0	0	0	0	0	0	3387	3387
521	REAL PRICE-MILLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.85	62.99
466	INFLATION INDEX	126.72	135.59	145.08	155.24	166.10	177.73	190.17	203.48	217.73	232.97
520	PRICE-MILLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.73	146.75
	-----INCOME----------										
516	REVENUE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	375.0	497.0
170	LESS OPERATING COSTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.9	29.3
517	OPERATING INCOME	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	348.1	467.7
214	ADD INTEREST EARNED ON FUNDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6
550	LESS INTEREST ON SHORT TERM DEBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8
391	LESS INTEREST ON LONG TERM DEBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	483.8	493.9
548	NET EARNINGS FROM OPERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-135.7	-30.4
	-----CASH SOURCE AND USE----										
548	CASH INCOME FROM OPERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-135.7	-30.4
446	STATE CONTRIBUTION	403.7	262.3	245.0	262.3	260.5	300.1	321.2	343.6	367.7	0.0
143	LONG TERM DEBT DRAWDOWNS	0.0	210.4	255.7	283.9	732.8	1398.6	1214.0	742.3	101.1	0.0
248	WORCAP DEBT DRAWDOWNS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	17.7
549	TOTAL SOURCES OF FUNDS	403.7	472.7	500.7	546.2	1013.3	1698.7	1535.2	1085.9	431.1	-12.6
320	LESS CAPITAL EXPENDITURE	403.7	472.7	500.7	546.2	1013.3	1698.7	1535.2	1085.9	333.1	29.5
448	LESS WORCAP AND FUNDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	17.7
260	LESS DEBT REPAYMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2
395	LESS PAYMENT TO STATE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
141	CASH SURPLUS(DEFICIT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-78.1
249	SHORT TERM DEBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.1
444	CASH RECOVERED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-----BALANCE SHEET----------										
225	RESERVE AND CONT. FUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.5	61.6
371	OTHER WORKING CAPITAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.5	54.1
454	CASH SURPLUS RETAINED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
370	CUM. CAPITAL EXPENDITURE	403.7	876.4	1377.1	1923.3	2936.6	4635.3	6170.5	7256.4	7589.5	7619.0
465	CAPITAL EMPLOYED	403.7	876.4	1377.1	1923.3	2936.6	4635.3	6170.5	7256.4	7687.5	7734.7
461	STATE CONTRIBUTION	403.7	666.0	911.0	1173.3	1453.8	1753.9	2075.1	2418.7	2786.4	2786.4
462	RETAINED EARNINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-135.7	-166.0
555	DEBT OUTSTANDING-SHORT TERM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	193.8
554	DEBT OUTSTANDING-LONG TERM	0.0	210.4	466.1	750.0	1482.8	2881.4	4095.4	4837.7	4938.8	4920.6
542	ANNUAL DEBT DRAWWDOWN $1982	0.0	155.1	176.3	182.8	441.2	786.9	638.4	364.8	46.4	0.0
543	CUM. DEBT DRAWWDOWN $1982	0.0	155.2	331.4	514.3	955.5	1742.3	2380.7	2745.5	2791.9	2791.9
519	DEBT SERVICE COVER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.91

DATA10L2 WATANA (ON LINE 1993)-$200M P.A. STATE FUNDS-INFLATION 7%-INTEREST 10%-CAPCOST $3.647 BN 15-DEC-82

CASH FLOW SUMMARY
===($MILLION)====

		1995	1996	1997	1998	1999	2000	2001	2002	2003	TOTAL
73	ENERGY GWH	3387	3387	3387	3387	3387	3387	3387	3387	3387	37257
521	REAL PRICE-MILLS	61.36	70.63	66.38	62.27	58.47	54.94	51.68	48.69	43.56	0.00
466	INFLATION INDEX	249.28	266.73	285.40	305.38	326.75	349.62	374.10	400.29	428.31	0.00
520	PRICE-MILLS	152.95	188.40	189.45	190.14	191.04	192.09	193.35	194.89	186.56	0.00
	-----INCOME----------										
516	REVENUE	518.0	638.0	641.6	644.0	647.0	650.6	654.8	660.0	631.8	6557.9
170	LESS OPERATING COSTS	32.0	35.0	38.1	41.6	45.4	49.6	54.1	59.1	64.5	475.7
517	OPERATING INCOME	486.0	603.1	603.5	602.3	601.6	601.0	600.7	601.0	567.4	6082.3
214	ADD INTEREST EARNED ON FUNDS	6.2	6.7	7.3	8.0	8.7	9.5	10.4	11.4	12.4	86.3
550	LESS INTEREST ON SHORT TERM DEBT	19.4	12.4	13.4	12.9	12.9	13.1	13.7	14.9	16.4	138.9
391	LESS INTEREST ON LONG TERM DEBT	492.1	505.0	501.2	497.0	492.4	487.3	481.7	475.6	469.1	5379.1
548	NET EARNINGS FROM OPERS	-19.3	92.4	96.2	100.4	105.0	110.1	115.7	121.8	94.2	650.6
	-----CASH SOURCE AND USE----										
548	CASH INCOME FROM OPERS	-19.3	92.4	96.2	100.4	105.0	110.1	115.7	121.8	94.2	650.6
446	STATE CONTRIBUTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2786.4
143	LONG TERM DEBT DRAWDOWNS	149.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5088.4
248	WORCAP DEBT DRAWDOWNS	8.1	29.3	11.2	12.2	10.6	10.4	12.3	13.1	14.1	237.2
549	TOTAL SOURCES OF FUNDS	138.4	121.7	107.4	112.7	115.6	120.6	128.0	135.0	108.3	8762.6
320	LESS CAPITAL EXPENDITURE	32.2	35.1	38.3	41.8	45.6	49.8	54.4	59.3	64.8	8040.4
448	LESS WORCAP AND FUNDS	8.1	29.3	11.2	12.2	10.6	10.4	12.3	13.1	14.1	237.2
260	LESS DEBT REPAYMENTS	20.0	38.1	41.9	46.1	50.7	55.8	61.4	64.7	43.0	440.0
395	LESS PAYMENT TO STATE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
141	CASH SURPLUS(DEFICIT)	78.1	19.2	16.0	12.5	8.7	4.5	-0.1	-2.2	-13.6	45.0
249	SHORT TERM DEBT	-78.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
444	CASH RECOVERED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-----BALANCE SHEET----------										
225	RESERVE AND CONT. FUND	67.2	73.4	80.1	87.4	95.4	104.1	113.7	124.0	135.4	135.4
371	OTHER WORKING CAPITAL	56.6	79.7	84.2	89.1	91.7	93.4	96.2	99.0	101.8	101.8
454	CASH SURPLUS RETAINED	0.0	19.2	35.2	47.7	56.4	60.9	60.8	58.6	45.0	45.0
370	CUM. CAPITAL EXPENDITURE	7651.2	7686.3	7724.6	7766.4	7812.1	7861.9	7916.3	7975.6	8040.4	8040.4
465	CAPITAL EMPLOYED	7775.0	7858.6	7924.1	7990.7	8055.6	8120.3	8186.9	8257.2	8322.5	8322.5
461	STATE CONTRIBUTION	2786.4	2786.4	2786.4	2786.4	2786.4	2786.4	2786.4	2786.4	2786.4	2786.4
462	RETAINED EARNINGS	-185.3	-92.9	3.3	103.8	208.8	318.9	434.6	556.4	650.6	650.6
555	DEBT OUTSTANDING-SHORT TERM	123.9	153.1	164.3	176.6	187.1	197.6	209.9	223.0	237.2	237.2
554	DEBT OUTSTANDING-LONG TERM	5050.1	5012.0	4970.1	4924.0	4873.2	4817.4	4756.1	4691.3	4648.4	4648.4
542	ANNUAL DEBT DRAWNDOWN $1982	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2851.9
543	CUM. DEBT DRAWNDOWN $1982	2851.9	2851.9	2851.9	2851.9	2851.9	2851.9	2851.9	2851.9	2851.9	2851.9
519	DEBT SERVICE COVER	0.92	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	0.00

DATA1OL4 WATANA (ON LINE 1993) $150M P.A. STATE FUNDS-INFLATION 7%-INTEREST 10%-CAPCOST $3.647 BN 15-DEC-82

CASH FLOW SUMMARY
-=($MILLION)-

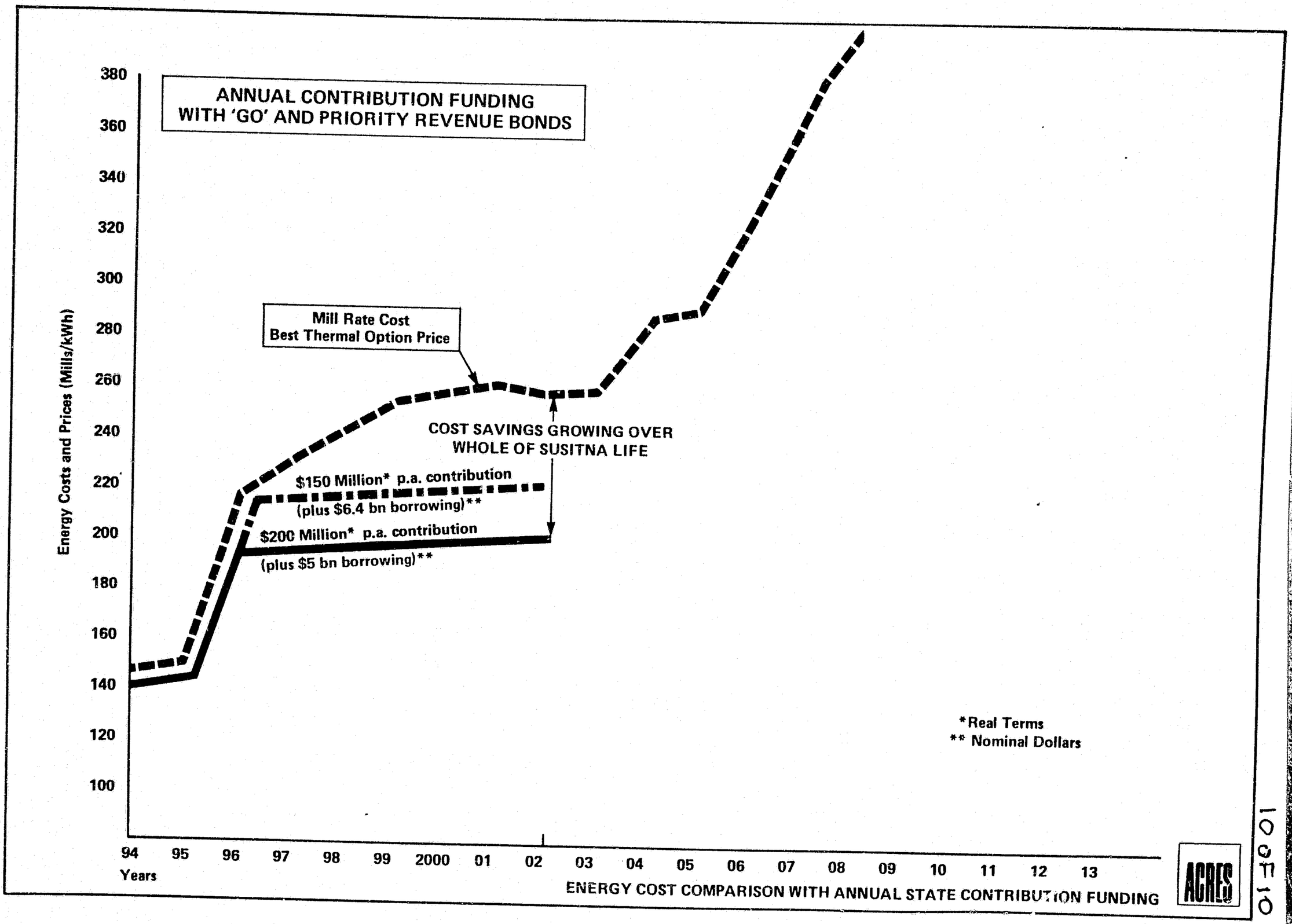
		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
73	ENERGY GWH	0	0	0	0	0	0	0	0	3387	3387
521	REAL PRICE-MILLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.85	62.99
466	INFLATION INDEX	126.72	135.59	145.08	155.24	166.10	177.73	190.17	203.48	217.73	232.97
520	PRICE-MILLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.73	146.75
	-----INCOME----------										
516	REVENUE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	375.0	497.0
170	LESS OPERATING COSTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.9	29.3
517	OPERATING INCOME	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	348.1	467.7
214	ADD INTEREST EARNED ON FUNDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6
550	LESS INTEREST ON SHORT TERM DEBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8
391	LESS INTEREST ON LONG TERM DEBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	570.4	598.3
548	NET EARNINGS FROM OPERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-222.3	-134.8
	-----CASH SOURCE AND USE----										
548	CASH INCOME FROM OPERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-222.3	-134.8
446	STATE CONTRIBUTION	325.5	171.7	183.8	196.6	210.4	225.1	240.9	257.7	275.8	0.0
143	LONG TERM DEBT DRAWDOWNS	78.2	308.8	334.6	375.1	837.6	1518.7	1351.5	899.2	279.6	0.0
248	WORCAP DEBT DRAWDOWNS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	17.7
549	TOTAL SOURCES OF FUNDS	403.7	480.5	518.4	571.7	1048.0	1743.8	1592.4	1156.9	431.1	-117.1
320	LESS CAPITAL EXPENDITURE	403.7	480.5	518.4	571.7	1048.0	1743.8	1592.4	1156.9	333.1	29.5
448	LESS WORCAP AND FUNDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	17.7
260	LESS DEBT REPAYMENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.1
395	LESS PAYMENT TO STATE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
141	CASH SURPLUS(DEFICIT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-186.4
249	SHORT TERM DEBT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	186.4
444	CASH RECOVERED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-----BALANCE SHEET----------										
225	RESERVE AND CONT. FUND	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.5	61.6
371	OTHER WORKING CAPITAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.5	54.1
454	CASH SURPLUS RETAINED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
370	CUM. CAPITAL EXPENDITURE	403.7	884.2	1402.6	1974.3	3022.3	4766.1	6358.5	7515.4	7848.5	7877.9
465	CAPITAL EMPLOYED	403.7	884.2	1402.6	1974.3	3022.3	4766.1	6358.5	7515.4	7946.5	7993.7
461	STATE CONTRIBUTION	325.5	497.2	681.0	877.6	1088.0	1313.1	1554.0	1811.7	2087.5	2087.5
462	RETAINED EARNINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	-222.3	-357.1
555	DEBT OUTSTANDING-SHORT TERM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	302.1
554	DEBT OUTSTANDING-LONG TERM	78.2	387.0	721.6	1096.7	1934.3	3453.0	4804.5	5703.7	5983.2	5961.1
542	ANNUAL DEBT DRAWDOWN $1982	61.7	227.7	230.6	241.6	504.2	854.5	710.6	441.9	128.4	0.0
543	CUM. DEBT DRAWDOWN $1982	61.7	289.5	520.1	761.7	1266.0	2120.4	2831.1	3273.0	3401.3	3401.3
519	DEBT SERVICE COVER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.75

DATA10L JATANA (ON LINE 1993)-$150M P.A. STATE FUNDS-INFLATION /%-INTEREST 10%-CAPCOST $3.647 BN 15-DEC-82

CASH FLOW SUMMARY
--($MILLION)--

		1995	1996	1997	1998	1999	2000	2001	2002	2003	TOTAL
73	ENERGY GWH	3387	3387	3387	3387	3387	3387	3387	3387	3387	37257
521	REAL PRICE-MILLS	61.36	82.47	79.16	74.13	69.49	65.18	61.19	57.51	54.12	0.00
466	INFLATION INDEX	249.28	266.73	285.40	305.38	326.75	349.62	374.10	400.29	428.31	0.00
520	PRICE-MILLS	152.95	219.97	225.92	226.38	227.05	227.87	228.90	230.22	231.81	0.00
	-----INCOME----------										
516	REVENUE	518.0	745.0	765.1	766.7	769.0	771.7	775.2	779.7	785.1	7547.6
170	LESS OPERATING COSTS	32.0	35.0	38.1	41.6	45.4	49.6	54.1	59.1	64.5	475.7
517	OPERATING INCOME	486.0	710.0	727.0	725.1	723.5	722.2	721.1	720.6	720.6	7071.9
214	ADD INTEREST EARNED ON FUNDS	6.2	6.7	7.3	8.0	8.7	9.5	10.4	11.4	12.4	86.3
550	LESS INTEREST ON SHORT TERM DEBT	30.2	50.1	51.9	50.6	49.8	49.3	49.1	49.5	50.6	441.0
391	LESS INTEREST ON LONG TERM DEBT	596.1	593.7	591.0	588.1	584.8	581.3	577.4	573.1	568.3	6422.5
548	NET EARNINGS FROM OPERS	-134.2	73.0	91.4	94.4	97.6	101.1	105.1	109.4	114.1	294.8
	-----CASH SOURCE AND USE----										
548	CASH INCOME FROM OPERS	-134.2	73.0	91.4	94.4	97.6	101.1	105.1	109.4	114.1	294.8
446	STATE CONTRIBUTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2087.5
143	LONG TERM DEBT DRAWDOWNS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5983.2
248	WORCAP DEBT DRAWDOWNS	8.1	29.3	11.2	12.2	10.6	10.4	12.3	13.1	14.1	237.2
549	TOTAL SOURCES OF FUNDS	-126.1	102.3	102.6	106.6	108.2	111.6	117.4	122.5	128.2	8602.7
320	LESS CAPITAL EXPENDITURE	32.2	35.1	38.3	41.8	45.6	49.8	54.4	59.3	64.8	8299.3
448	LESS WORCAP AND FUNDS	8.1	29.3	11.2	12.2	10.6	10.4	12.3	13.1	14.1	237.2
260	LESS DEBT REPAYMENTS	24.3	26.7	29.4	32.3	35.6	39.1	43.0	47.3	52.1	351.8
395	LESS PAYMENT TO STATE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
141	CASH SURPLUS(DEFICIT)	-190.6	11.2	23.7	20.2	16.4	12.2	7.7	2.7	-2.7	-285.6
249	SHORT TERM DEBT	190.6	-11.2	-23.7	-20.2	-16.4	-12.2	-7.7	-2.7	2.7	285.6
444	CASH RECOVERED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-----BALANCE SHEET----------										
225	RESERVE AND CONT. FUND	67.2	73.4	80.1	87.4	95.4	104.1	113.7	124.0	135.4	135.4
371	OTHER WORKING CAPITAL	56.6	79.7	84.2	89.1	91.7	93.4	96.2	99.0	101.8	101.8
454	CASH SURPLUS RETAINED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
370	CUM. CAPITAL EXPENDITURE	7910.1	7945.2	7983.5	8025.4	8071.0	8120.8	8175.2	8234.5	8299.3	8299.3
465	CAPITAL EMPLOYED	8034.0	8098.4	8147.9	8201.9	8258.1	8318.4	8385.1	8457.6	8536.5	8536.5
461	STATE CONTRIBUTION	2087.5	2087.5	2087.5	2087.5	2087.5	2087.5	2087.5	2087.5	2087.5	2087.5
462	RETAINED EARNINGS	-491.3	-416.3	-326.8	-232.5	-134.9	-33.7	71.3	180.7	294.8	294.8
555	DEBT OUTSTANDING-SHORT TERM	500.9	519.0	506.4	498.5	492.6	490.9	495.5	505.9	522.8	522.8
554	DEBT OUTSTANDING-LONG TERM	5936.9	5910.1	5880.8	5848.4	5812.9	5773.8	5730.8	5683.4	5631.4	5631.4
542	ANNUAL DEBT DRAWWDOWN $1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3401.3
543	CUM. DEBT DRAWWDOWN $1982	3401.3	3101.3	3401.3	3401.3	3401.3	3401.3	3401.3	3401.3	3401.3	3401.3
519	DEBT SERVICE COVER	0.74	1.07	1.10	1.10	1.10	1.10	1.10	1.10	1.10	0.00

ATTACHMENT TO MEMORANDUM TO R. BENISH - 12/16/82



0025 0

April 7, 1982

Dale Nolan
For: J. G. Warnock

RECORD OF TELEPHONE CALL WITH DENIS ROHAN, SRI
APRIL 1, 1982

cc: J. D. Lawrence
C. A. Debelius
A. J. Merrett
S. Diener

Contact made with Rohan to determine his reaction to Acres Feasibility Study. He advised that he was just at that time formulating his opinion to be given to the APA Board.

Rohan's basic concerns arise from high interest rates (never been higher) and from the softening of full prices. He contends that major capital outlay on hydroelectric power development can only be justified if situation on these two vital factors is reversed. i.e. low interest rates and rapidly rising fuel costs.

His view is that Acres has not squarely addressed these vital issues and that we have reported on a situation which possibly could have been postulated a year ago but not now. He feels we should be responsive to current trends.

Rohan feels that the multivariate probability analysis we carried out, while being an advance on what we offered before, does not adequately present the now likely combination of adverse factors militating against early construction of Susitna. Nor have we emphasised sufficiently the lack of economic justification in the short term i.e. to 2010. (Rohan notes that the Executive Summary, which the public will read does not stress this point).

Taking all adverse points into consideration Rohan feels that APA should not proceed to sink substantial funds into Susitna. He would agree with expenditures in the "hundred thousands" for licence application etc. but would question any greater amounts.

We may expect a cool and negative viewpoint from Rohan in his report to the Board of APA.

(JGW advised T. McGuire of the conversation with D. Rohan in a later telephone call on April 1, 1982)

Record of Telephone Call

Project No. P5700.07

Date 3-17-82

File 5700.07.11

Project SUSITNA

Subject MARKETING/FINANCE REPORT

Call (to) (from) FIRST BOSTON (Company) Telephone No. _____

Discussion between TARLETON LONG/LOU AMBROSIA (of Company) and JD LAWRENCE (of Acres)

Details of Call LONG WONDERED WHY ACRES HAD ISSUED THE TASK II REPORT FINAL — LOU AMBROSIA'S IMPRESSION AT THE SEATTLE MEETING WAS THAT A FURTHER DRAFT WOULD BE ISSUED FOR FIRST BOSTON REVIEW FIRST.

I POINTED OUT THAT THIS REPORT WAS SUMMARIZED IN THE FEASIBILITY REPORT WHICH WAS ISSUED TO MEET ADA'S MARCH 15 DEADLINE. I ASSURED LONG THAT GAVIN HAD BEEN IN FREQUENT CONTACT WITH MCGUIRE & YOULD AND I WAS SURE THEY HAD AUTHORIZED ISSUE OF THE TASK II REPORT. THE CIRCULATION HAD SO FAR BEEN RESTRICTED TO ROHAN, FIRST BOSTON AND FIRST SOUTHWEST. IF THEY HAD FURTHER COMMENT THEY MIGHT BE INCORPORATED BUT WE HAD A FINAL DEADLINE OF APRIL 1 FOR GENERAL DISTRIBUTION OF THIS REPORT.

LONG SAID HE WOULD TALK TO ADA (YOULD) AND HAVE THE REPORT REVIEWED BEFORE GETTING BACK TO US AGAIN

Action Required

Mark Mark 26

Jim discussed this matter with Eric Yould March 26 and he advised that we acted properly & should not be overly concerned. He was aware of a particular sensitive attitude on First Boston which has arisen as a result of matters which arose in connection with our feed of uranium

JGW

Copies to (1) JGW
(2) CAD
(3) DCW
(4)

Circulation to (1) (2) (3) (4) (5) (6) (7) (8) File

0 0 2 5 0

AGRES

OFFICE MEMORANDUM

TO: Memo to File

Date: March 8, 1982

File: P5700.11

FROM: J. G. Warnock

cc: A. J. Merrett
M. Walton

SUBJECT: ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

Attached are construction expenditure curves for Watana and Devil Canyon. They cover the periods 1981-1997 (16 years) for Watana and 1992-2002 (10 years) for Devil Canyon.

The distribution of expenditures for the concentrated portion of the expenditure programs Watana 1985 to 1993 and Devil Canyon 1994 to 2002 have been compared with the distribution used for the financial analysis of Susitna as follows:-

	Watana % Annual Expenditure			Devil Canyon % Annual Expenditure	
	Assumed	Actual*		Assumed	Actual*
1985	7.2	7.0	1994	5.8	4
86	9.2	9.5	95	8.4	5.5
87	8.7	9.5	96	8.1	8.0
88	8.4	12.0	97	5.9	14.5
89	14.6	13.0	98	18.3	20.0
90	22.3	15.0	99	19.2	19.0
91	16.5	14.5	2000	18.0	16.0
92	8.2	13.5	01	12.5	12.0
93	3.7	6.0	02	3.8	1.0
	98.8	100.0		100.0	100.0

*Derived from the Project Schedule and Construction Cost Estimate

JGW:DN

3/17/62

ATTENTION: A. [illegible]

SUBJECT: [illegible]

[illegible]

[illegible]

X 10 TO THE SIXTH

[illegible]

[illegible]	426	204		14
[illegible]	1,776	704	248 +	42%
[illegible]	442	120		12
[illegible]	153	[illegible]	1321	26 %
TOTAL	3,647	1,452	5127	

[illegible]

[illegible]

Dems + ½ Support
Fac

3,144 61.3%

[illegible]

+

0025

February 19, 1982

Mr. D. W. Grimes
Vice President
First Southwest Company
Mercantile Bank Building
DALLAS, Texas 75201

Dear Don:

I enclose the replacement copy of the Task 11 report. You will see that I have amended the paragraph on 18-61 to correct the missing line. Sorry about the omission.

We had a useful meeting with you in Seattle and will now proceed with all due speed to get the final draft document ready for mid-March.

Thank you for your assistance.

With kind regards.

Yours sincerely,

JGW:ic
Encl.

J. Gavin Warnock
Vice President
Corporate Development

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525

PLEASE REPLY TO: 480 University Avenue
Toronto, Ontario
CANADA M5G 1V2

Telephone: 416-595-2000

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Amended wording suggested by First Boston Corporation and First Southwest Company on February 18, 1982

We are only able to render a conditional estimate of the possible impact on the credit of the State of Alaska as a result of the contemplated general obligation bond financing of $1.8 billion for the Watana stage of the Susitna Hydroelectric Project. Alaska's presently favorable ratings are greatly influenced by its low debt to assessed value ratio which helps to overcome the unusually high per capita debt statistics. Given the dramatic growth of assessed valuation and the fact that interest expense through start-up of Watana is to be capitalized from bond proceeds, the envisaged financing should not significantly impair the credit of the State. Even if the State of Alaska's general obligation bond rating were reduced one full letter grade, the cost in terms of interest rates on future bond issues would likely be in the approximate range of 1/4% to 1/2% per annum.

0 0 2 5 0 0

Watana stage as a project fully capable of securing tax-exempt low interest revenue bond finance for its completion.

(iv) Impact on State Credit Rating of Susitna G.O. Bond Financing

Where the financing plan actually undertaken is near the minimum ($2 billion) State preappropriation, the G.O. bond financing at the Watana stage may be of a magnitude that warrants consideration of its effect upon the overall credit rating of the State of Alaska.

As at June 1980 the State of Alaska had approximately $744,000,000 of General Obligations outstanding. In late 1981 these were rated AA by Moody's and AA-by Standard & Poors at which time approximate interest rates for new issues at an AA rating were 8.25 percent for 1-year bonds, 11.25 percent for 10 years and 13 percent for 20 years.

The impact on the State's credit rating of Susitna G.O. bond financing of $1.8 billion (in 1982 dollars) for the $2 billion State preappropriation case will depend upon a wide range of factors. The most important will obviously be the strength of the credit standing of the State of Alaska, at that time, taking into account the total amount of bonds which it has in issue. The second factor will be the economic prospects for Susitna itself - that is the extent to which it is perceived by the bond market as likely to be able to meet the interest burden on the G.O. bonds issued to finance it's construction.

The advice of First Boston Corporation, lead Management Underwriters approved by APA, First Southwest Corporation, the Financial Advisors and Wohlforth & Flint, Bond Counsel respectively to APA, has been sought on the question of the possible influence of the Susitna financing, at the Watana stage, on the credit of the State and they have concurred in the following statement.

We are only able to render a conditional estimate of the possible impact on the credit of the State of Alaska as a result of a contemplated general obligation bond financing of $1.8 bn (1982 $) for the Watana stage of the Susitna Hydroelectric Project. Alaska's presently favorable ratings are greatly influenced by its low debt to assessed value ratio which helps to overcome the unusually high per capita debt statistics. Given the dramatic growth of assessed valuation in Alaska and the fact that interest expense through start-up of Watana is to be capitalized from bond proceeds, the envisaged financing should not significantly impair the credit of the State. In a worse case scenario of a one point downgrading in credit ratings, assuming some degree of normality in the bond market, the cost in terms of higher interest rates on future bond issues would be of the approximate order of one-quarter percent. If the bonds issued in this time frame are of the customary magnitude heretofore, the effect could only be relatively small in terms of total additional burden particularly when consideration is given to

0025

P5700.11 February 12, 1982 Telecopier #415-859-4100

Dr. Dennis Rohan
Stamford Research Institute
International
333 Ravenswood Avenue
MENLO PARK, California 94250
U S A

Dear Dr. Rohan:

I hope by now you will have received or be receiving shortly from APA our draft Section 18 of the Feasibility Report - Economic, Marketing and Financial Evaluation which we hope to discuss with Eric Yould, Terry McGuire and yourself on the 18th of February.

I should be most appreciative if you could find time at that meeting to let us have your views specifically on Section 18.5 dealing with Financial Risk. The analysis given there is only a "first cut". This is because some of the data (particularly the distribution of the coal fired generation capital cost)was not available at the time of writing, while other data was available only in the last few days.

It is our intention (subject to your views and those of the APA) to expand the analysis to bring in (a) time for construction/ completion (allowing for possibly delays arising from for instance regulatory or environmental constraints, and for possible acceleration of the rate of dam construction) and (b) the probability distributions associated with the cost saving stream. The latter poses formidable difficulties since it consists of a series of capital investments together with distributions of possible escalation of the associated fuels. We intend to simulate these primarily by Beta distributions.

No decision has yet been taken whether or not we should extend the analysis to the Devil Canyon stage. Apart from the technical difficulties there is the question whether or not financial/economic forecasts of detailed events nearly two decades away have sufficent credibility to make them worthwhile.

As present planned, therefore, our main intention now is to extend the analysis and to broaden significantly the magnitude of the simulation to enable a tightening up and better definition of the statistical character of the results.

We look forward to having your views.

Yours sincerely,

J. G. Warnock
Vice President

JGW:DN

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ACRES TOR

FEBRUARY 10, 1982 P5700.11

P5700

OUT Feb 10/82

ATTN: PHIL HOOVER

RE: SUSITNA

AS DISCUSSED THIS MORNING WITH CHUCK WE ARE IN THE PROCESS OF HARDENING UP THE FINANCIAL ANALYSIS FOR SUSITNA AND WISH TO ENSURE THAT OUR INTERPRETATIONS OF OGP-5 RESULTS ARE IN FACT PROPERLY BASED ON THE FINAL OUTCOME OF YOUR PLANNING RUNS. WE WOULD LIKE TO RECEIVE A.S.A.P.

1) FULL PRINT-OUTS FROM FINAL OGP-5 RUNS FOR SUSITNA OPTION. L9K3 L9J9
ALL THERMAL OPTION
CAN THESE PRINT-OUTS BE RUN ON TERMINAL IN TORONTO WHERE WE COULD COLLECT OR DO THEY HAVE TO BE DELIVERED VIA PHILADELPHIA OR FROM COLUMBIA.

2) SUMMARY OF INPUT DATA INCLUDING BUT NOT LIMITED TO.
- CAPITAL COSTS W AND DC
- DISTRIBUTION OF CAPITAL EXPENDITURES WITH TIME
- METHOD OF COMPUTING I.D.C. – Cap cost adjusted by amount for I.D.C.
- METHOD OF COMPUTING ESCALATION – Cap cost + IDC escalated throughout construction period
- METHOD OF COMPUTATION OF INVESTMENT COSTS.

82% with labour included RJ W 1982

3) CHECK MANUAL COMPUTATIONS OF INVESTMENT COST, FULL COST AND O + M FOR EACH YEAR AND YEAR +1 AT WHICH AN ADDITION IS MADE TO THE SYSTEMS

4) ANY FURTHER RELEVANT DATA

WILL CALL THIS AFTERNOON TO CHECK WITH YOU AVAILABILITY OF THIS CONFIRMATION DATA

REGARDS

J.G. WARNOCK

ACRES - TORONTO

ACRES COLB

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ACRES

OFFICE MEMORANDUM

:	Memo to File	*Date:*	February 8, 1982
		File:	
FROM:	J. G. Warnock	*cc:*	A. J. Merrett M. Walton
SUBJECT:	CHINESE COVER		

The term chinese cover has been applied to the debt service cover for revenue bond financing capital projects.

"Chinese cover" may take one of two forms.

(1) Borrowings are increased by an amount to provide for any expected deficiences in debt service cover.

(2) The burden arising from application of the debt service cover ratio each year is rebated to the purchase in the following year.

It has been suggested by First Boston Corporation that a "Chinese Cover" approach would satisfy any requirements that arise for debt service cover on Susitna.

JGW:DN

0 0 2 5 0

, AJM
Make Rec com

Record of Telephone call February 5, 1982
Don Grimes to J. G. Warnock

Re: Alaska Power Authority

Don Grimes called February 5th expressing some concern over the range of interest rate increases we had attributed to "one notch" of bond rating. In present market conditions he would have expected possibly up to 1/2% or possibly 3/8. He certainly felt that 1/8% was too low. Agreed, for the present, to use "approximately 1/4%.

Noted that debt/capita in Alaska is very high being about twice the level in the lower 48. (25.2% is Alaska level according to SEP 1979 statistics). Assessment/capita is also very high and therefore this offsets the high debt/capita.

Also changed words to cover "future State of Alaska bonds".

Later call from Don Grimes recommended that the wording should be changed and his recommendation was accepted and introduced to the darft text.

J. G. Warnock
Acres

JGW:DN

0025

February 4, 1982
P5700.11
T-1486

Mr. E. P. Yould
Alaska Power Authority
334 West 5th Avenue
Suite 31
ANCHORAGE, Alaska 99501
U. S. A.

Dear Eric,

We have now completed a draft of the text dealing with Economic, Marketing and Financial Evaluation, Marketing and Risk Analysis. In view of the volume of material, these topics are being summarized in Section 18. of the draft Feasibility Report. You will, however, be interested in reviewing the unabridged text now enclosed with this letter. This still bears the reference "Section 18." and the Tables and Figures are so numbered. We shall make the necessary changes in the Final Report.

Some outstanding issues not covered in this draft, require further consideration and possible inclusion in the Final document.

Firstly, regarding omissions from the report. You will notice that we have not described the various schemes now being considered to ensure that the financing plan would go ahead with tax-exempt bond financing. These were set out in our letter of January 11, 1982. The omission is partly for reasons of space; but primarily following the advice of tax counsel at our New York meeting, that it is not advisable to compromise the chances of achieving compliance through a special IRS ruling by making, in advance, an explicit description in a publicly available document.

Secondly, the analysis omits any reference to the financial cost benefit or relative net present worth computations. This is because we are awaiting final and detailed reconciliation of the more comprehensive financial analysis with the data finally used in the economic analysis. Present indications are that, in terms of benefit/cost ratio, Susitna shows an advantage of about 1.5 over the coal-fired thermal alternative.

....2

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525

Please reply to: 480 University Ave
TORONTO, Ontario
Canada M5G 1V2

You will see that we have provided an initial probability assessment in the section on Financial Risk - 18.5. This analysis is subject to some further revision, to take account of the influence of schedule variances now available from the basic risk analysis. We shall forward further runs to you as soon as they are available.

You will also see that we have omitted any reference to the financing options posed by the Governor's proposals embodied in Senate Bill 646. A very provisional assessment has been made of these proposals and the outcome is shown on the attached diagram.

The lower line of the diagram represents the price of energy first from Watana and then from Devil Canyon based on the assumption that the whole of the capital cost of the project is financed in accordance with Governor's proposals. You will see that this gives rise to a mill rate of around 80 mills/KWh in 1994 which is about 55% of the cost of energy from the best thermal option. Thereafter it would only escalate at around 6% per year (in line primarily with the historic rate of inflation as required by the proposed bill.) On this basis the government proposals appear attractive and warrant further most careful consideration.

Incidentally the Senate Bill 646 proposals have the advantage of overcoming some of the strange effects of the wholesale rate setting process as required by Bill 25. This is the phenomenom of the mill rate in any of the larger appropriation cases tending to be constant for nearly a decade and then shooting up with the coming on-stream of a virtually 100% debt financed Devil Canyon. There is the related anomaly that, by continuing to capitalize in the first year of operation, the cost would be virtually zero in the first year of Watana and also of Devil Canyon so that the output to all intents and purposes would have to be passed on to the utilities free.

Finally, I would like to stress the importance of the preappropriation approach used throughout our analysis. If this approach is not used and appropriations are made only as required for construction, the magnitudes of appropriation and debt financing double automatically. Misreporting and misunderstanding of capital requirement trends influenced, as they will be, by continuing inflation, can then have possibly serious and unjustifiable effects. Preappropriations by the State obviates this risk and in addition (as noted in the report), cushions the impact of higher interest rates and inflation in the future.

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I discussed the distribution of our report with Terry McGuire and, as agreed, have sent full copies of Section 18.1 through 18.5 to Tarleton Long at First Boston Corporation and Don Grimes at First Southwest Company. One particular paragraph in 18.4 requires their concurrence and we telecopied this wording to them for their consideration (copy attached).

Tony Merrett and I look forward to having your views on these points and any other comments which you may have on the existing draft. In particular, we would appreciate your advice on the extent, if at all, it would be appropriate to consider in detail the proposals of Bill 646.

Yours sincerely,

J. G. Warnock
Vice President
Corporate Development

JGW:DN
Enclosure

0 0 2 5 0

February 4, 1982 Telecopier #(212)909-2200

Attn: Tarleton Long
First Boston Corp
New York, New York

Re: Alaska Power Authority
Susitna Hydroelectric Project
Financing Evaluation

We shall be dispatching to you by courier on Feb. 5th a copy of our recent Section 18.4 dealing with Acres American Financial Evaluation of Susitna Project. The base financing plan adopted therein has various levels of State pre-appropriations provided through the Power Development Fund followed by G.O. bond financing for the balance of Watana Phase, with later conversion to Revenue Bonds for completion also of Devil Canyon. Our discussion on the impact on the State credit rating of Susitna G.O. bond financing foresees a requirement for about $1.8 billion (in $1982) for a State pre-appropriation of $2 billion and recognizes that the impact will dependent on a number of factors. The text of our report calls for your advice on the question of the possible influence on the Susitna financing on the State G.O. bond credit position and we are seeking concurrence with the following statement.

Quote....It is only possible to give a conditional estimate of the possible effect on the bond financing envisaged for Watana stage on the credit of the State of Alaska. On the assumption that its bond rating at that time is unchanged from today's level and that normality prevails on the bond market, as long as the bond requirements did not markedly exceed the magnitudes envisaged for the $2.0 billion State pre-appropriation. This is because the existing level of bond indebtedness of the State of Alaska is relatively low and certainly well below the levels consistent with its present rating and its wealth relative to population. At what we would regard as an outside extreme of one point downgrading, the cost in terms of the higher interest rate which would have to be paid on the State of Alaska's bonds might be expected to be* of the order of one-eighth to one-quarter percent. If the bond issues are of a magnitude assumed therefore, the effect could only be relatively small in terms of total additional interest burden particularly when account is taken of the short period (an average of five years) that the G.O. bonds used to finance Watana would be in issue prior to being refinanced by revenue bonds....Unquote.

We have the view of Wohlforth & Flint that there are no legal problems inherent in this paragraph. They have advised that we may also wish to consult with Nuveen & Co. as financial advisor to the State but this has not yet been initiated.

This advance telecopy is provided to draw particular attention to the above text when you receive Section 18.4. Its reference is 18.4 C iv.

We understand that any plans for APA meetings in NYC next week have been deferred.

Regards,
J. G. Warnock, Acres American Incorporated

Responded (on Friday February 5th) with a recommendation for rewording of the paragraph. Thus recommendation was accepted and the wording proposed by First Southwest has been incorporated with minor editorial changes only.

P5700.11

February 3, 1982

Alaska Power Authority
Susitna Hydroelectric Project

Marketing and Financing Task 11
Meeting to discuss Financing Plans

Held at the offices of First Boston Corportion, 55 East 52nd Street, NYC.

Present:

-Eric P. Yould	Executive Director, Alaska Power Authority
Terry McGuire	Manager, Finance Alaska Power Authority
-John Raben	Vice President, Public Finance, First Boston Corportion
-Don Grimes	Vice President, First Southwest Company
John Crew	First Southwest Company
-Robert Gibbons	Debevoise & Plimpton, Counsel to First Boston Corporation
Steven Gross	Debevoise & Plimpton, Counsel to First Boston Corporation
Morris	Debevoise & Plimpton, Tax Partner with firm
-Gavin Warnock	Vice President, Acres American Incorporated
-Tony Merrett	Consultant to Acres American Incorporated

Purpose of Meeting:

To receive, from Acres American, a presentation of progress to date on the preparation of a plan for financing the Susitna Hydroelectric Project. To hear from First Boston and their bond counsel observations on plans under consideration.

Notes on Meeting:

J. G. Warnock introduced the topic by a review of the several modes of financing considered by AAI over the past 12 months, (Attachment A). Dr. A. J. Merrett has been directly involved in the development of the financing concepts and would deal specifically in this presentation, with that most recently considered; a combination of State equity, general obligation bonds and tax exempt revenue bonds.

Dr. A. J. Merrett explained the reasoning which had influenced the progression in the financing plans and led to the combined G.O./ Revenue bond approach to the Watana/Devil Canyon projects over the period 1993-2004. The implications of this type of financing with two levels of State equity contribution ($1.5 billion and $2.5 billion) were explained. Dr. Merrett's presentation is summarized on Attachment B 1.

....2

P5700.11

February 3, 1982

Alaska Power Authority
Susitna Hydroelectric Project

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-Tony Merrett	Consultant to Acres American Incorporated

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....2

Alaska Power Authority
Susitna Hydroelectric Project
(continued)

Discussion of the financing plans covered the following points.

-In regard to G.O. bond financing concern was expressed in regard to reaction within State of Alaska which might take the form of questioning why the project could not proceed with revenue bond finance. Recent events on the WPSS nuclear plant project would possibly be related to difficulties perceived for Susitna. WPSS problems should not be underestimated as they are likely to call to question a number of issues on which projects had been confidently funded in the past. Contractual aspects of WPSS financing arrangements would not be tested in the courts.

-It was recognized that with G.O. bond financing Susitna would not require take-or-pay contracts. The matter of impact on State credit had to be considered. While no immediate impact was to be expected following release of any plan to fund Susitna with G.O. bond issues there was a real possibility of downgrading the credit standing of the State. The degree of this would depend on several matters including the borrowing status and the economoy of the State at the time.

-It was noted that at the time Susitna comes on-stream the system will have 250 MW of plant and transmission facilities with "asset value" of $1 billion in place. The wholesale energy charges applicable to Susitna would be a blend of charges applicable to all projects supported by the Power Development Fund.

-The tax exempt status of the Project was discussed at length. The legal/tax advisers stated that the determination as to whether the bonds are taxable Industrial Development Bonds (IDB) was generally made under tests concerning:-

.use of the proceeds of the bonds

.use of the facility financed with the bonds

Output constraint rules applied regarding the business interest receiving the benefit. Special output contract rules apply in relation to "benefits" and "burdens" and application of formula decides the outcome. A current problem as yet untested with IRS is that no clear indication exists as to whether the business and security tests are the exclusive conditions which have to be met or whether other conditions might then be applied. (A filing request is being prepared for submission in February 1982 to clarify this issue but no determination is expected for about 6 months.)

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Alaska Power Authority
Susitna Hydroelectric Project
(continued)

-Various approaches are worth considering in efforts to ensure compliance with IRS rules. Considerable work has been done in connection with a South Carolina Public Service case where contracts are envisaged with no take-or-pay obligation but with a demand charge. Such charges alone may be expected to meet rules as possibly would contracts that were written for no specific amount of energy supply or for no specific time period. It is clear that contracts written with no-tax-exempt parties with rates set to meet revenue requirements would be unlikely to comply. Arguments have been presented in the past to suggest that in an electrical system it is not possible to discern where output of any particular plant is being delivered or sold, and such considerations make application of IRS rules difficult. It was noted that a difficulty exists in resolving contention points as the IRS staff responsible for the present rules is no longer available to provide expert opinion or judgement.

-Questions posed during the discussion on Susitna project compliance with IRS covered the following:-

- o Relationship between the fuel output capability (nameplate) and the contracted quantities of energy.
- o The term of take-or-pay contracts in relationship to the life of the project.
- o Acknowledgement that no single non-tax-exempt person can take more than 25% of output and cover more than 25% of debt service.
- o Interpretation of term "two or more related" persons poses the question as whether co-ops are "related".

-Discussion of revenue bond and alternative means of financing raised the following points:-

- o Bond holders are, to an increasing extent, more concerned with what risks are incurred prior to project reaching operational stage; experience has shown that post start-up projects incur fewer difficulties.
- o State guarantee for bond issues could probably be provided but this would require a constitutional amendment.
- o There could be value in double barrelled bonds bearing the obligation of both APA and the State of Alaska.
- o Likelihood that State funds would only be provided on an "as-required-for-construction" basis. They will probably require, furthermore, an annual appropriation.

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Alaska Power Authority
Susitna Hydroelectric Project
(continued)

- o Leverage leasing, particularly for coal fired thermal plants, is now considered a possible mode of financing. Some types of plant could be owned and operated by taxable entity. Raising of finance could be supported by selling the tax benefits from depreciation and investment tax credit. These benefits are available if the facility is not "used" by an exempt person. ("use" is defined as "ownership" or "leasing" and "take-or-pay" contracts generally not regarded as "lease" but basis of undertakings requires careful consideration). Investment tax credit and depreciation are worth about 25% of cash outlays and the balance would have to be raised by conventional financing.
- o Joint action possibilities could be considered with co-ops becoming part owner e.g. A co-op could take a 75% undivided interest and buy 25% of the residual APA portion of output (i.e. about 40% in all). From an alternative point of view, if user wanted 35% of output he could buy 35% undivided interest, from the prime owner, his debt requirements. ITC and and depreciation would still enjoy tax shelter benefits. In APA's opinion joint action unlikely to be an acceptable route from the State's point of view.

-In consideration of the overall financing market climate the following points were made.

- o In the past the principal buyers of municipal bonds have been:-

  -casualty companies - who may be back into the market

  and -banks - who are unlikely to be significant purchasers in future

  The change in the perceptions of tax payers towards tax exempt bond investment has arisen from current trends in taxation policy. There is a very high level of forward supply and dealer inventories remain high. It was noted that the differential interest rates between tax exempt/non-tax-exempt was now 91% (as opposed to 65% in the past).

-Risks remain that the long term credit market may not recover its "faith" in major projects. No significant recovery is foreseen for 12-15 months and the true equilibrium may not be fully restored for say 5-6 years.

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Alaska Power Authority
Susitna Hydroelectric Project
(continued)

-Agreed that Acres American would prepare an outline of 3 or 4 options for Susitna financing and provide these to APA. Acres would also compile a summary of "Project Facts" for the guidance of the Financial Advisors.

Meeting adjourned at 12:30 p.m.

JGW:DN

0025

THE FIRST BOSTON CORPORATION

ALASKA POWER AUTHORITY

January 8, 1982

Representing	Name
Alaska Power Authority	Eric Yould Terry McGuire
Acres American Inc.	J. G. Warnock A. J. Merrett
First Southwest Company	John Crew Don Grimes
Debevoise & Plimpton	Steven Gross Robert Gibbons
First Boston	John Raben

Attendees at meeting,offfices of First Boston Corporation - January 8, 1982

0025

OFFICE MEMORANDUM

TO: J.W. Hayden

Date: February 3, 1982

File: P5700.14.06

FROM: M.A. Hosko/P.M. Hoover

cc: G. Warnock
J. Lawrence
C. Debelius

SUBJECT: Susitna Hydroelectric Project
Subtask 6.37 Results Summary

Attached is a listing of OGP-5 runs made for subtask 6.37 which will be documented in Section 18 of the feasibility report and appendices. Unless otherwise noted, all plans were run under the "base case" parameters:

- Medium Load Forecast (Dec., 1981)
- Economic Parameters (0% escalation, 3% interest)
- O&M and capital cost escalation at about 2% per year (1992 on) also escalate at 1.8% prior to 1992
- Capital Costs per Battelle

		1982-2000	2001-2010
- Fuel Costs and Escalation:			
- Coal (Nenana)	$1.75 (1982)	2.3%	1.1%
- Coal (Beluga)	$1.43 (1982)	2.6%	1.2%
- Coal (Healy)	$1.46 (1982)	2.6%	1.2%
- Natural Gas	$2.80 (1990)	Variable	2.0%
- Oil	$6.50 (1982)	2.0%	2.0%

The multivariate (probability tree) analysis also provided a few runs for this list as noted.

M.A. Hosko

P.M. Hoover

MAH:PMH/pml

Enclosures

0 0 2 5 0

RUN	PLAN	OGP-5ID	COMMENTS	1982 $ x 10^6 LONG TERM PW
L1	Fuel escalation = 0%	See V1	Alternatives	-
L2	"	and V2	Susitna "C"	-
M1	Interest Rate = 7%	Not Run	Alternatives	-
M2	"	Not Run	Susitna "C"	-
N1	Reliability Sensitivity	Not Run	To be run with Battelle's % Reserve	-
N2	"	"	"	-
O1	O&M, CAP escalation = 0%	L4Z5	Alternatives	7157
O2	"	L4Z7	Susitna	5585
P1	Interest Rate = 5%	L9J7	Alternatives	4946
P2	"	L9J5	Susitna	5449
Q1	Interest Rate = 2%	LD23	Alternatives	11167
Q2	"	LD27	Susitna	8550
R1	Q&M, CAP escalation = 4%	LD31	Alternatives	9811
R2	"	LD33	Susitna	9029
S1	Interest Rate = 4%	L431	Alternatives	6235
S2	"	L439	Susitna	6126
T1	High Coal Cost ($2.08)	L3S3	Alternatives (Opt)	9721
T2	"	L7Z5	Susitna	8297
T3	"	L7Z9	Alternatives (A)	9030
U1	Susitna less contingency	LOX3	0% contingency (S33)	6151
U2	Susitna plus double contingency	L4L9	40% contingency (S31)	7974
V1	Zero Fuel Escalation	LI23	Alternatives (T15)	5660
V2	"	L3Y3	Susitna (S35)	6838
W1	High Fuel Escalation	LI15	Alternatives (T13)	10367
W2	"	L4M1	Susitna (S29)	7388

RUN	PLAN	OGP-5ID	COMMENTS	$ x 10^6 LONG TERM PW 1982($)
A	ALTERNATIVES	L9J9	dated 1/20/82	8238
B	ALTERNATIVES	L9E1	with 330MW Chakachamna in 1993	7899
C	Susitna Watana/DC	L9K3	Watana 680 MW 1/93 ~~Watana~~ Devil Canyon 600 680 1/2002	7062
D	Susitna DC/Watana	LG15	Devil Canyon 600 1/93 Watana 680 1/2002	7221
E	Chakachamna/DC	LG17	Chakachamna 1993 330MW Devil Canyon 1/97	8069
F1	Financial 7% 10%	LDT3	Alternatives same as A	Preliminary
F2	Financial 7% 10%	LAP7	Susitna same as C	Preliminary
F3	Financial 7% 10%	L9E3	Alternatives optimized	Preliminary
G1	Alternative's Cap. cost +20%	L3N1	Alternatives + 20%	8858
G2	Susitna "C" with manual adjustment	L9K3	of three gas turbine costs + 20%	7076
H1	Alternative's Cap. cost - 10%	L303	Alternatives - 10%	7915
H2	Susitna "C" with manual adjustment	L9K3	of three gas turbine costs - 10%	7056
I2	Susitna "C" L9K3 + 25%	LDL3	Susitna cost + 25%	
J1	High Load Forecast	L4W1	Alternatives	10859
J2	High Load Forecast	LCI5	Susitna: Watana 1993 Devil Canyon 1997	9247
K1	Low Load Forecast	L195	Alternatives	6878
K2	Low Load Forecast	L9K7	Susitna: Watana 1995 Devil Canyon 2004	6650

0025

ACRES

OFFICE MEMORANDUM

: Memo to File

Date: February 1, 1982

File: P5700.07.11

FROM: J. G. Warnock

cc: A. J. Merrett
M. Walton
C. A. Debelius

SUBJECT: SUSITNA
FINANCIAL RISK ANALYSIS

Capital cost - probability distribution. This memo records data input used for the above analysis. On Wednesday, 27th January the risk analysis being carried out in Columbia had reached the following conclusion regarding probability distribution.

Level of Capital Cost	$ billion*	Probability of Non-exceedance
Base Direct Cost + 40% (i.e. 2xcontingency)	5.96	90%
Base Direct Cost + 20% (i.e. Contribution Capital cost)	5.11	72%
Base Direct Cost (no contingency)	4.25	55%

The "outside" limit (at 99.8% probability of non-exceedance) was predicted to be $7.5 billion.

On Friday 29th January the capital cost for Watana and Devil Canyon was established at $5.1 billion.

JGW:DN

Dale Nolan

Dale Nolan
For: J. G. Warnock

*These costs quoted for reference only. The risk analysis was carried out on Watana alone at a capital cost of $3.6 approximately.

0025

OFFICE MEMORANDUM

TO: Memo to File

Date: February 1, 1982

File: 5700.07.11

FROM: J. G. Warnock

cc: A. J. Merrett
M. Walton
C.A. Debelius/P. Hoover
J. W. Hayden

SUBJECT: SUSITNA
FINANCIAL ANALYSIS
ENERGY OUTPUT

This memo records data used for the above analysis.

		Energy Deliveries GWh	Energy* Dumped/Carried Over
1993-2001	Watana alone	3387	-
2002		5223	498/291
03		5414	411/0
04		5605	363/258
05		6092	270/73
06		6147	178/106
07		6250	64/64
08		6472	33/33
09		6544	30/30
2010		6616	

Figure 18.4.4 shows the above energy deliveries plotted against (1) Demand - mid range Battelle forecast as of December 21/81 and (2) the energy values used in the OGP-5 runs.

JGW:DN

Dale Nolan

Dale Nolan
For: J. G. Warnock

*Carry over included in following year deliveries

0025 0

OFFICE MEMORANDUM

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FROM: J. G. Warnock

SUBJECT: SUSITNA
FINANCIAL ANALYSIS
ENERGY OUTPUT

Date: February 1, 1982

File: P5700.07.11

cc: A. J. Merrett
M. Walton
C.A. Debelius/P. Hoover
J. W. Hayden

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JGW:DN

Dale Nolan

For: J. G. Warnock

*Carry over included in following year deliveries

0002500

+

ACRES COLR

ACRES TOR

JAN 18/82 P5700.11

Out Jan 18/82

ATTN: PHIL HOOVER

RE: COST BENEFIT - A FEW THOUGHTS PRIOR TO CHUCK'S TRIP TO BUFFALO TOMORROW.

1. WE ASSUME YOU WILL NEED THE FOLLOWING RUNS IN ANY CASE FOR YOUR SENSITIVITY ANALYSIS.

CAP. COST SUSITNA	L	M	H
CAP. COST COAL	L	M	H
COAL ESCALATION	0	2 (APPROX)	3 (APPROX)
INTEREST RATE	2	3	4

TOTAL 81

2. IT MAY WELL BE THAT THE COST BENEFIT RATIO IS NOT SENSITIVE TO LOAD FORECASTS. AT MOST IT MIGHT BE SLIGHTLY SENSITIVE TO THE LOW LOAD. HENCE AT WORST NEED TO RUN MEDIUM AND LOW MAKING TOTAL RUNS 162 ALTHOUGH YOU MAY ALREADY HAVE SAY 10 LEAVING 152.

3. THIS SHOULD BE ADEQUATE FOR YOUR COST BENEFIT IF YOU NEED TO DO IT. THEREFORE, SUGGEST GO AHEAD WITH ABOVE RUNS AND COST BENEFIT AS NO ADDITIONAL COST (+) COMPARED WITH SENSITIVITY TEST REQUIREMENTS IS INVOLVED. WE WILL RUN IN PARALLEL IF WE CAN ON FINANCIAL IF NOT TOO COSTLY AND GIVE YOU BACK-UP.

(+) IT APPEARS SO ANYWAY

J.G. WARNOCK

+

ACRES COLR

ACRES TOR

0025500

V+

ACRES COLR

ACRES TOR

JANUARY 18/82 P5700.11

Out
Jan 18/82

ATTN: PHIL HOOVER

RE: SUSITNA

PLEASE PROVIDE SCHEDULE BY YEAR OF GWHR ABSORBED BY SYSTEM FROM SUSITNA OVER YOUR PLANNING PERIOD. ALSO WOULD BE INTERESTED IN ANNUAL OUTPUT FROM NEW COAL FIRED THERMAL POWER GENERATION ADDED.

PLEASE PROVIDE SCHEDULE WITH YEARLY DLR/MHR FOR 2MLDT3.

J.G. WARNOCK

+

ACRES COLR

ACRES TOR

A.

00250

O+

ACRES COLB

ACRES TOR

JANUARY 13, 1982 P5700.11

Out
Jan 13/82.

ATTN: C. A. DEBELIUS

ALASKA POWER AUTHORITY

SUSITNA

TASK 11 MARKETING

IN ORDER EXPEDITE COMPLETION OF MARKETING SEGMENT OF ASSIGNMENT AND REPORT WOULD REQUEST SONG OMKAR'S PRESENCE IN TORONTO FROM JAN. 18 FOR AT LEAST 5 AND PROBABLY 10 WORKING DAYS. PLEASE ISSUE NECESSARY TRAVEL AUTHORIZATION.

J.G. WARNOCK

+

ACRES COLB

ACRES TOR

ALASKA RAILBELT
ZEROX - 32
JOB NUMBER 2NLU13 01/15/82

YR	PUDL PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY $		¢/KWH D+M	¢/KWH N.I.	¢/KWH TOTAL
					JHU.	FUEL			
83	917	4736	57.09	463	39.59	48.17	9.38	0.	98.14
84	965	4829	57.12	607	46.91	68.18	10.59	0.	125.68
85	983	4922	57.16	643	65.64	53.63	11.44	0.	130.72
86	1003	5031	57.10	911	105.86	61.58	13.86	0.	181.00
87	1023	5141	57.37	974	107.01	67.85	14.68	0.	189.53
88	1044	5250	57.40	1047	108.45	75.14	15.88	0.	199.47
89	1064	5360	57.51	1100	106.32	82.04	16.98	0.	205.34
	1084	5469	57.44	1156	104.10	89.91	17.86	0.	211.86
	1121	5641	57.45	1229	104.97	98.14	19.31	0.	222.42
	1158	5853	57.70	1327	101.51	106.84	20.40	0.	228.77
	1192	6044	57.69	1472	103.24	118.43	22.03	0.	243.70
	1233	6236	57.58	1618	105.26	130.26	23.93	0.	259.44
	1270	6428	57.78	1836	113.12	146.46	26.06	0.	285.64
	1323	6701	57.82	2050	114.28	163.33	28.22	0.	305.93
	1377	6973	57.81	2241	170.44	161.57	32.22	0.	324.33
	1430	7246	57.69	2741	164.02	179.63	34.60	0.	378.31
	1484	7519	57.62	3018	169.26	199.03	37.62	0.	401.41
10	1537	7791	57.86	3279	158.99	220.71	40.65	0.	420.35

GENERATION SYSTEM

	NUKE	COAL	NGAS&T	DIL &T	DIESEL	CONCYC TYPES		
TYPE	1	2	3	4	5	6	7-10	
OPTNZING	0	1991	1991	0	0	1991	***	
FCT TRIM	0	0	0	0	0	0		
1990 AV	0	59	468	174	67	317	155	SUM= 1242

YR	YEARLY ADDITIONS							TOTAL CAPAB. + TIES	
91								1223	
92		1X	70					1260	
93						1X	200	1443	
94								1412	
95		1X	70					1425	
96		1X	70					1434	
97		1X	70					1430	
98		1X	70					1445	
99								1445	
0		1X	70					1471	
1		1X	70					1541	
2						1X	200	1688	
3		1X	70					1705	
4								1705	
5						1X	200	1817	
6		1X	70					1864	
7								1864	
8		1X	200					2038	
9								2037	
10		1X	70					2107	

MW ADD	0	200	700	0	0	600	0	SUM=	1500
MW RET	0	-96	-352	-176	-41	0	0	SUM=	-635
2010	0	213	816	0	6	917	155	SUM=	2107
PCT TOT	0.	10.1	38.7	0.	0.3	43.5	7.4	SUM=100	PCT
AV10	0	200	700	0	0	600	0	SUM=	1500
PCT TOT	0.	13.3	46.7	0.	0.	40.0	0.	SUM=100	PCT

* COMMITTED MW

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	H/Y	COST IN MILLION $ YEARLY COST	CUM. PW TOTAL
1991	910	1223	1223	34.4	0.062	0.	252.1	107.0
1992	926	1260	1260	35.7	0.051	0.	293.5	220.2
1993	947	1443	1443	52.4	0.013	0.	340.7	346.4
1994	965	1412	1412	46.3	0.033	0.	397.3	473.8
1995	983	1435	1435	45.9	0.032	0.	408.1	606.5
1996	1003	1434	1434	42.9	0.049	0.	618.8	769.5
1997	1023	1430	1430	54.8	0.053	0.	699.0	936.8
1998	1044	1445	1445	38.4	0.062	0.	791.6	1109.1
1999	1064	1445	1445	35.8	0.086	0.	877.6	1281.9
2000	1084	1471	1471	35.7	0.078	0.	1003.8	1462.4
2001	1121	1541	1541	37.5	0.049	0.	1148.15	1650.2
2002	1158	1688	1688	45.8	0.025	0.	1341.5	1849.6
2003	1196	1705	1705	42.6	0.040	0.	1520.3	2055.0
2004	1233	1705	1705	38.3	0.073	0.	1679.4	2261.3
2005	1270	1817	1817	43.1	0.061	0.	1975.6	2482.0
2006	1323	1864	1864	40.9	0.049	0.	2227.1	2700.1
2007	1377	1864	1864	35.4	0.100	0.	2477.0	2934.7
2008	1430	2038	2038	42.5	0.059	0.	2987.0	3187.3
2009	1484	2037	2037	37.3	0.084	0.	3242.6	3434.3
2010	1537	2107	2107	37.1	0.070	0.	3641.1	3605.7

GENERAL ELECTRIC COMPANY
DOT-2 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT

Commonwealth Edison

YR	PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	INV.	YEARLY FUEL	O+M	$/KWH N.I.	TOTAL
91	910	4549	57.07	252	0.	42.35	6.13	0.	55.47
92	928	4643	56.95	294	2.45	51.81	8.97	0.	63.23
93	947	4736	57.09	361	15.37	31.64	9.16	0.	76.17
94	965	4829	57.12	399	15.07	37.71	9.90	0.	82.68
95	983	4922	57.16	458	17.78	64.40	10.89	0.	93.07
96	1003	5031	57.10	619	20.60	90.41	11.98	0.	122.99
97	1023	5141	57.37	699	23.58	95.31	13.07	0.	131.96
98	1044	5250	57.40	792	24.74	105.73	14.31	0.	150.78
99	1064	5360	57.51	874	26.19	121.15	15.65	0.	162.99
0	1084	5469	57.44	1004	29.85	134.34	17.35	0.	183.54
1	1101	5561	57.45	1148	33.24	150.55	19.21	0.	202.80
2	1118	5653	57.70	1342	39.21	154.14	19.83	0.	229.35
3	1136	6044	57.69	1520	56.38	171.48	21.68	0.	251.54
4	1232	6236	57.58	1627	54.58	189.09	23.65	0.	267.32
5	1270	6428	57.78	1976	82.18	199.99	25.17	0.	307.33
6	1323	6701	57.62	2227	84.40	220.36	27.37	0.	332.13
7	1377	6973	57.81	2477	81.30	244.06	29.86	0.	355.22
8	1430	7246	57.67	2987	141.90	237.26	33.06	0.	412.23
9	1484	7518	57.83	3263	134.77	261.46	35.74	0.	433.96
10	1537	7791	57.86	3441	139.01	289.31	39.13	0.	467.25

GENERAL ELECTRIC COMPANY
DGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT

Coal fired or
Nuclear
Hydro

Combined cycle

XEROX
JOB NUMBER 2MLAP7 01/14/87

GENERATION SYSTEM

	NUKE	COAL	NGAGDT	OIL GT	DIESEL	CONCYC	TYPE R 7-10		
TYPE	1	2	3	4	5	6			
OPTMZING	0	1993	1993	0	0	1993	***		
FCT TRIM	0	0	0	0	0	0			
1992 MW	0	59	452	141	67	317	155	SUM=	1190

YR	YEARLY MW ADDITIONS								TOTAL CAPAC. + TIES	
92								680*	1653	
93									1822	
94									1774	
95									1701	
96									1630	
97									1575	
98									1573	
99									1531	
00									1531	
01								601*	2079	
02									2026	
03								1*	2027	
04									1936	
05								1*	1917	
06									1967	
07			1X	70				1*	2032	
08			1X	70					2031	
09								1*	2102	
10			1X	70						

MW ADD	0	0	210	0	0	0	1265	SUM=	1495
MW RET	0	-44	-335	-141	-41	0	0	SUM=	-283
2010	0	13	326	0	4	317	1440	SUM=	2102
PCT TOT	0.	0.6	15.5	0.	0.3	15.1	68.5	SUM=100	PCT
AUTO	0	0	210	0	0	0	0	SUM=	210
PCT TOT	0.	0.	100.0	0.	0.	0.	0.	SUM=100	PCT

* COMMITTED MW

Gustine

ALASKA RAILBELT
ZEROX - Y
JOB NUMBER ZMIAP7 01/14/82
****

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	H/Y	COST IN MILLION $ YEARLY COST	CUM. PW TOTAL
1993	947	1853	1853	95.7	0.000	0.	1164.9	408.3
1994	965	1822	1822	88.8	0.000	0.	1185.9	786.2
1995	983	1774	1774	80.5	0.000	0.	1201.6	1154.2
1996	1003	1704	1704	69.9	0.000	0.	1244.0	1461.8
1997	1023	1630	1630	59.4	0.000	0.	1268.1	1765.4
1998	1044	1575	1576	50.8	0.001	0.	1296.1	2047.4
1999	1064	1525	1525	43.0	0.002	0.	1332.7	2311.6
2000	1084	1531	1531	41.2	0.015	0.	1379.5	2509.7
2001	1171	1531	1531	30.6	0.032	0.	1438.3	2791.8
2002	1158	2079	2079	79.5	0.000	0.	2030.8	3097.5
2003	1176	2026	2026	69.1	0.001	0.	2114.8	3383.5
2004	1233	2027	2027	64.4	0.001	0.	2042.3	3634.4
2005	1270	1939	1939	52.7	0.017	0.	2124.9	3871.7
2006	1323	1917	1917	44.9	0.045	0.	2071.9	4082.1
2007	1377	1987	1987	44.3	0.025	0.	2239.6	4288.8
2008	1430	2032	2032	42.1	0.029	0.	2277.4	4479.7
2009	1484	2031	2031	36.9	0.050	0.	2416.8	4664.2
2010	1537	2102	2102	36.6	0.025	0.	2505.9	4838.0

Summa

0 0 2 5 0

ALASKA RAILBELT
ZERO X - 3%
JOB NUMBER: 2RLA07 01/14/82

YR	POOL PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY INV.	YEARLY FUEL	M/MWH O+M	M/MWH N.I.	M/MWH TOTAL
93	947	4736	57.07	1362	225.01	11.14	9.82	0.	245.97
94	965	4829	57.12	1386	220.68	14.33	10.58	0.	245.59
95	983	4922	57.16	1202	216.51	16.29	11.74	0.	244.54
96	1003	5031	57.10	1244	211.82	23.34	12.10	0.	247.26
97	1023	5141	57.37	1268	207.25	26.41	12.76	0.	246.66
98	1044	5250	57.41	1298	202.99	30.37	13.30	0.	247.66
99	1064	5360	57.01	1333	198.81	34.81	15.01	0.	248.63
0	1084	5469	57.44	1379	194.80	41.31	16.08	0.	252.24
1	1101	5461	57.65	1438	188.25	48.48	17.35	0.	254.07
2	1158	6352	62.61	2036	311.32	0.	6.24	0.	317.56
3	1196	6451	61.61	2117	309.27	11.70	6.96	0.	327.93
4	1233	6597	60.92	2042	302.00	0.	6.94	0.	307.93
5	1270	6698	60.21	2105	298.04	11.75	7.40	0.	317.23
6	1323	6880	59.36	2072	290.18	3.55	7.43	0.	301.16
7	1377	7079	60.69	2240	287.95	19.64	8.76	0.	316.35
8	1430	7310	58.20	2277	285.16	17.12	9.27	0.	311.55
9	1484	7551	58.08	2417	276.07	33.49	10.51	0.	320.07
10	1537	7827	58.14	2506	273.31	35.42	11.42	0.	320.15

ALASKA RAILFIT
ZERO% - 3%
JOB NUMBLK 2RLD13 01/15/82

GENERATION SYSTEM

	NUKE	COAL	NGASOI	OIL ST	DIESEL	COMCYC	TYPES	
TYPE	1	2	3	4	5	6	7-10	
OPTMZING	0	1993	1993	0	0	1993	***	
PCT TRIM	0	0	0	0	0	0		
1992 MW	0	59	452	142	67	317	155	SUM= 1190

YR	YEARLY MW ADDITIONS							TOTAL CAPAB. + TIES
93		200*						1373
94		200*						1542
95								1495
96		200*						1624
97			70*					1620
98			70*					1635
99								1635
0								1591
1			70*					1661
2								1608
3			70*					1625
4			70*					1695
5			140*					1747
6			70*					1794
7		200*						1994
8								1968
9			70*					2037
10								2037

MW ADD	0	800	630	0	0	0	0	SUM=	1430
MW RET	0	-46	-328	-141	-41	0	0	SUM=	-582
2010	0	813	746	0	6	317	155	SUM=	2037
PCT TOT	0.	39.9	36.6	0.	0.3	15.6	7.6	SUM=100	PCT
AUTO	0	0	0	0	0	0	0	SUM=	0
PCT TOT	0.	0.	0.	0.	0.	0.	0.	SUM= 0	PCT

* COMMITTED MW

Thermal - Coal

ALASKA RAILBELT
ZERO% = 3%
JOB NUMBER 2RLBT3 01/15/83

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TOTAL CAPABILITY (INCLUDING TIES) TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	LOSS OF LOAD PROBABILITY H/Y	COST IN MILLION $ YEARLY COST	COST IN MILLION $ CUM. PW TOTAL
1983 4736	947	1373	1373	45.0	0.063	0.	464.8	162.9
1984 4826	965	1542	1542	59.8	0.027	0.	606.9	354.3
1985 4922	983	1492	1492	52.0	0.077	0.	643.4 130	542.7
1986 5031	1003	1624	1624	61.9	0.059	0.	910.6 160	782.4
1987 5141	1023	1620	1620	58.4	0.084	0.	974.4	1015.7
1988	1044	1635	1635	56.6	0.092	0.	1047.2	1243.6
1989	1064	1635	1635	53.6	0.055	0.	1100.1	1461.2
2000	1084	1591	1591	46.8	0.059	0.	1156.0	1669.1
2001	1121	1441	1661	48.2	0.038	0.	1259.1	1875.0
2002	1138	1608	1608	36.9	0.062	0.	1339.0	2074.1
2003	1196	1625	1625	35.9	0.087	0.	1472.9	2273.1
2004	1233	1695	1695	37.5	0.057	0.	1418.0	2471.8
2005	1270	1747	1747	37.6	0.045	0.	1836.1	2676.9
2006	1323	1794	1794	35.6	0.052	0.	2050.0	2885.0
2007	1377	1994	1994	44.8	0.023	0.	2240.5	3119.5
2008	1430	1948	1948	37.6	0.064	0.	2741.2	3367.3
2009	1484	2037	2037	37.3	0.031	0.	3017.8	3579.7
2010	1537	2037	2037	32.5	0.095	0.	3274.9	3806.8

Approx

210
4465 | 11560
10938
6220

19
514 | 9774
514
4600

1774 | 1331
284
629 | 18912
12856
54240
51424
31160

247
6044 | 14730
12088
26420
24156
24600 1618

726
481 | 6071
48
127
96
510

143
48 | 6871
48
207
192
150
4736 | 4641
9
57
4943 98 km/hr

42
7791 | 32750
31164
15860

Average Annual Energy Output – (Usable) – SAVES
Sentinel

	GWhrs
1993	3387
94	3387
95	3387
96	3387
97	3387
98	3387
99	3387
2000	3387
01	3387
02	5721
03	5844
04	5968
05	6092
06	6224
07	6348
08	6472
09	6544
2010	6616
11	6638
12	6660
13	6682
14	6704
15	6726
16	6748
17	6770
18	6792

These figures are the equivalent energy outputs from alternative coal fired units added to system AS DESPATCH BY OGP-5,

Reference Thermal unit: Bi+2 2562

Bi+2
M1 3905

Bi+2
M1 4211

Bi+2+3
M1 4633

P5700 4

Telephoned by MA Hooks to D & Jarrett
JAN 18 1982

Average Annual Energy Output – (Usable) – SAVES

Saskatoon

	GWhrs
1993	3387
94	3387
95	3387
96	3387
97	3387
98	3387
99	3387
2000	3387
01	3387
02	5721
03	5844
04	5968
05	6096
06	6224
07	6348
08	6472
09	6544
2010	6616
11	6638
12	6660
13	6682
14	6704
15	6726
16	6748
17	6770
18	6792

These figures are the equivalent energy outputs from alternative coal fired units added to system as DESPATCH BY OGP-5.

Reference Thermal unit, Bit2 2562

Bit2
M1 3905

Bit2
M1 4211

Bit2+3
M1 4633

P5700 11

Telephoned by MA Hawkes to d & Jamieson
JAN 18 1982

Under the scheme we would contrive to construct contracts which, to any rational bond holder, would clearly amount to virtual certainty, without the output numbers being specified numerically. The contracts might take the form, for example, of the utilities contracting to take output equal to a given percentage of the average of their total sales of electricity over the term of the bonds. We would then argue vis a vis the Section 103 that natural calamities or massive economic recession might conceivably make this a very low actual offtake by the contracting utility so that there were no guaranteed payments violating the business and security interest test. These contracts could also be supplemented by guaranteed payments which were within the 25% debt service limitation so that, for example 24.9% of the debt service was covered by such payments.

State Appropriation as a "Tail-end Loan" for Repayment over 35 Years after Repayment of Revenue Bonds

On Friday we discussed the possibility of some State recovery in the form of a continuation of the debt service payments after recovery of the whole of the revenue bond financing, and we pointed out that this would be in fact a negligible burden in real terms. If the State appropriation were re-structured in this manner it would furthermore, substantially alleviate the tax exempt financing problem. The appropriation could be structured so that the APA carries it as an interest free loan from the State upto the point of making actual revenue issues. The APA then makes repayment of the State loan part of the bond issue. The State loan would be repayable starting at the end of 35 years and continuing for a further 35 years at the same magnitude of annual payments as the Revenue Bond debt service for the first 35 years. This extension of the total term of the formal financing to 70 years would, then, double the debt service for purposes of Section 103 since this defines debt service as "debt service payment times the number of years". On a rough estimate this might enable us to get the allowable level of minimum guaranteed payments upto virtually all of the debt service on the non-State revenue bonds over the first 35 years, effectively avoiding our tax exempt problem.

Contingent State Guarantee

This scheme would envisage a State guarantee of payment of the debt service in the event that the APA was not able to meet such payment. The APA in its turn would not engage in any contracts on a scale which could be interpreted as "take-or-pay" or "minimum guaranteed payment" which would make the bonds IDB's. There would be no necessity for the APA to

....3

seek such exacting contracts since the State contingent guarantee would give the bond holders effectively the same guarantee as they would have on a G. O. Bond. At the same time the guarantee, because it was contingent and only, if ever, likely to be called upon for a fraction of the bond issue, its effect on the State's credit would be correspondingly small. (We appreciate that we shall have to investigate the constitutional issues applying to State guarantees).

In submitting these or any other schemes to your advisors we would of course spell them out in more detail and provide a general briefing on the factual characteristics of the project and its financing. We feel this brief summary of our ideas developed over the past few days might be helpful in written form.

We look forward to discussing them with you later this afternoon and receiving any comments or changes you might wish to make.

Yours sincerely,

J. G. Warnock
Vice President
Corporate Development

JGW:dn

FINANCING PLANS CONSIDERED DECEMBER 1980 TO JANUARY 1981

- o CONVENTIONAL DEBT PROJECT FINANCING
- o STATE CONTRIBUTION THROUGH SUBORDINATED LOAN
- o PARTIAL DIRECT FUNDING BY STATE (WATANA DAM)
- o ROYALTY RECOVERY ON PARTIAL STATE FUNDING
- o RENEWABLE EQUITY RECOVERY
- o FULL STATE EQUITY FINANCING
- o VARIOUS LEVELS OF STATE EQUITY FINANCING
- o DEBT SERVICE GUARANTEE FUND
- o STATE APPROPRIATION WITH G.O. BOND FINANCING CONVERTING TO REVENUE BOND DEBT

ACRES

ECONOMIC VIABILITY

$$\text{BENEFIT/COST RATIO} = \frac{\text{INCREMENTAL SYSTEM COST ON BEST THERMAL OPTION PW}}{\text{INCREMENTAL SYSTEM COST WITH SUSITNA PW}}$$

≥ 1.5

BASED ON:

- HIGH CONFIDENCE LEVEL SUSITNA CAP COST ($5.2 BN IN 1982)
- THERMAL COSTS CONSISTENT WITH ALL MAJOR AUTHORITATIVE FORECASTS
- ALLOWING FOR 2% P.A. REAL INCREASE IN CAPITAL COSTS

HENCE: LONG TERM ECONOMIC VIABILITY

ACRES

0025

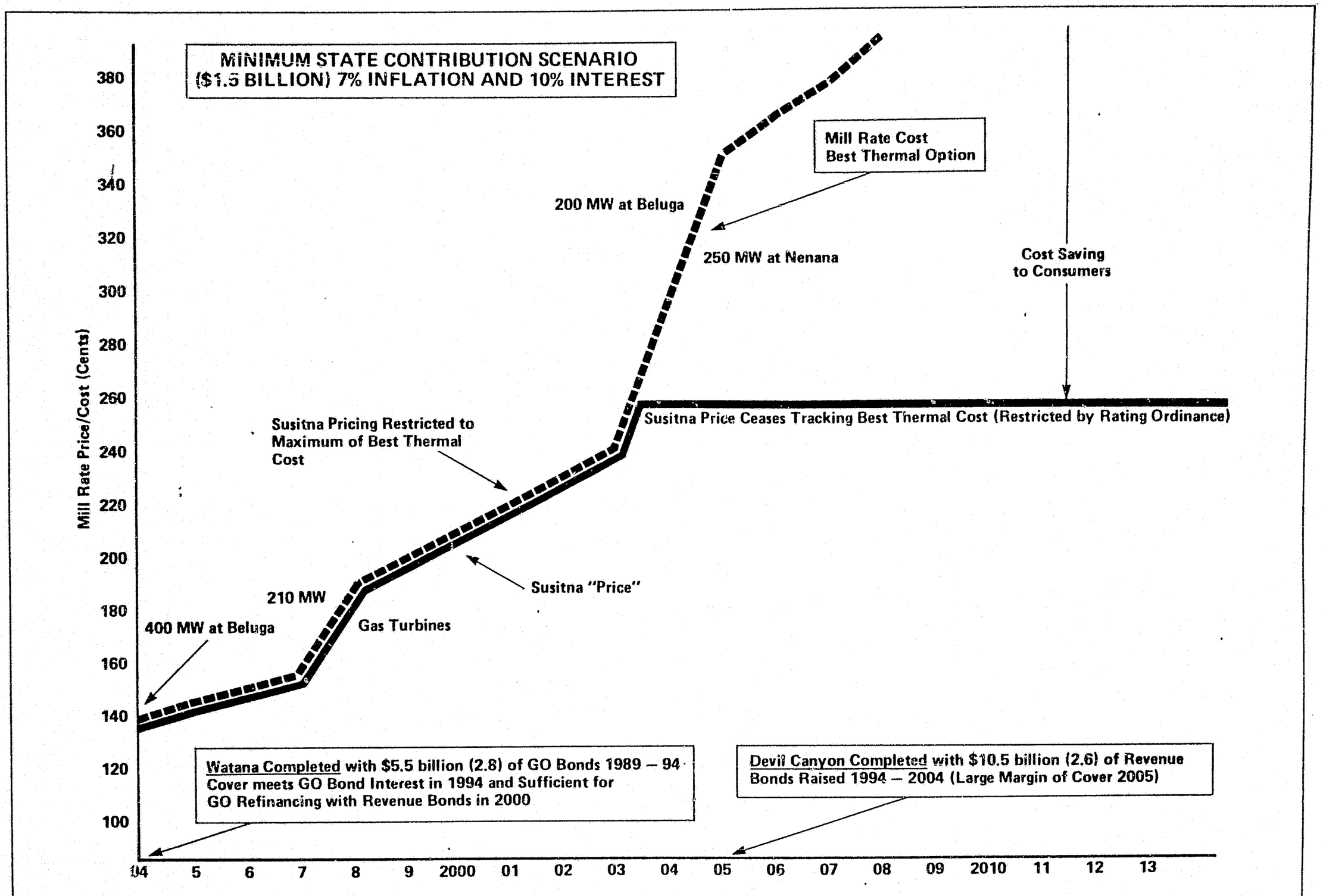
MINIMUM $1.5 BN STATE CONTRIBUTION SCENARIO

BASIC CONSTRAINTS:

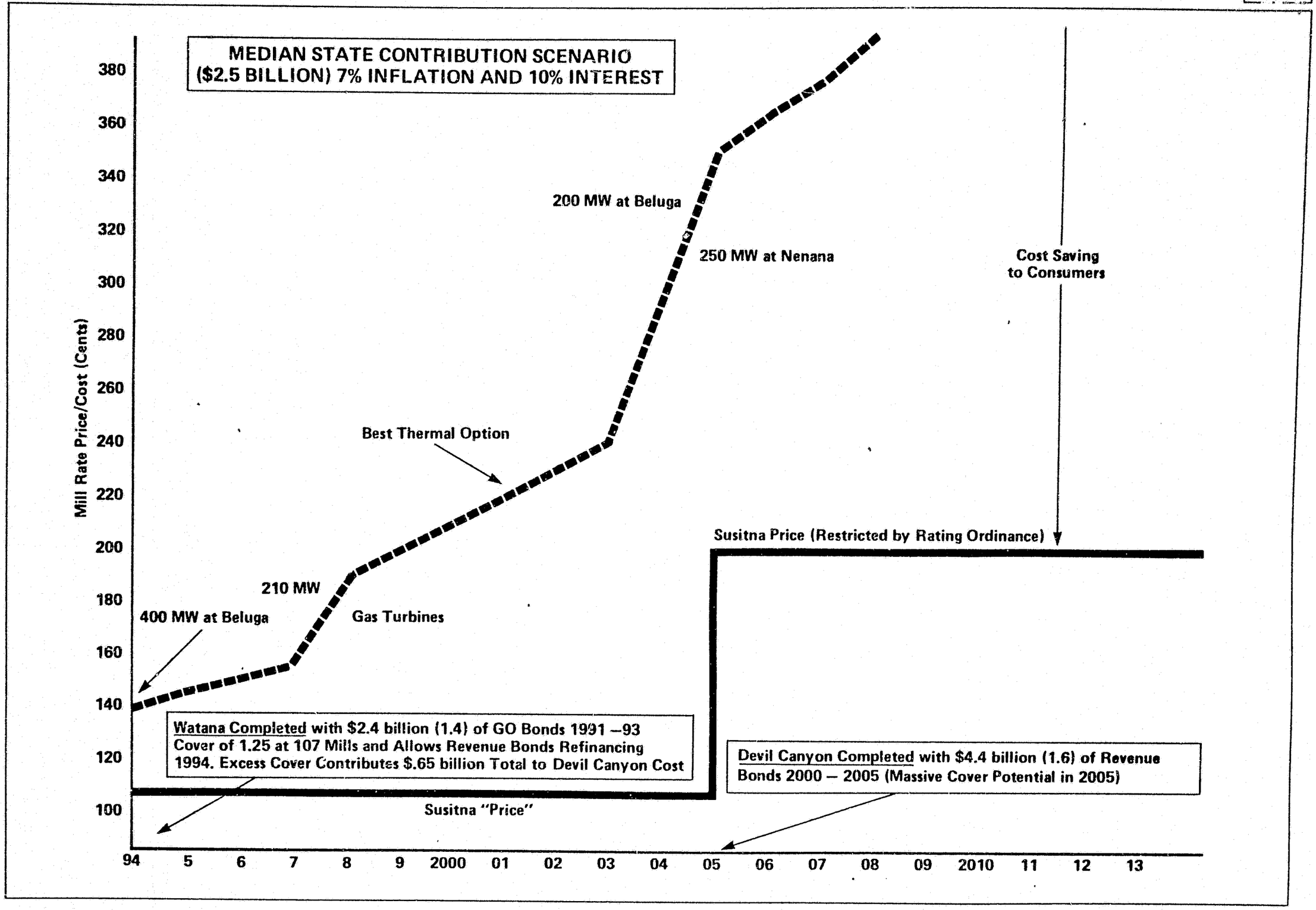
- CANNOT SELL AT A PRICE IN EXCESS OF BEST THERMAL OPTION.
- CANNOT CHARGE A PRICE IN EXCESS OF COST (INCLUDING DEBT SERVICE COVER).
- "LOW" STATE CONTRIBUTION ($1.5 BN IN 1982) PUSHES CHARGE FOR SUSITNA ENERGY UP AGAINST MAXIMUM SET BY BEST THERMAL OPTION.

ACRES

ACRES


MINIMUM STATE CONTRIBUTION SCENARIO
($1.5 BILLION) 7% INFLATION AND 10% INTEREST
Mill Rate Price/Cost (Cents)
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
Mill Rate Cost
Best Thermal Option
200 MW at Beluga
250 MW at Nenana
Cost Saving
to Consumers
Susitna Price Ceases Tracking Best Thermal Cost (Restricted by Rating Ordinance)
Susitna Pricing Restricted to
Maximum of Best Thermal
Cost
Susitna "Price"
210 MW
Gas Turbines
400 MW at Beluga
Watana Completed with $5.5 billion (2.8) of GO Bonds 1989 – 94
Cover meets GO Bond Interest in 1994 and Sufficient for
GO Refinancing with Revenue Bonds in 2000
Devil Canyon Completed with $10.5 billion (2.6) of Revenue
Bonds Raised 1994 – 2004 (Large Margin of Cover 2005)
94
5
6
7
8
9
2000
01
02
03
04
05
06
07
08
09
2010
11
12
13

ACRES


MEDIAN STATE CONTRIBUTION SCENARIO
($2.5 BILLION) 7% INFLATION AND 10% INTEREST
Mill Rate Price/Cost (Cents)
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
200 MW at Beluga
250 MW at Nenana
Best Thermal Option
210 MW
Gas Turbines
400 MW at Beluga
Cost Saving to Consumers
Susitna Price (Restricted by Rating Ordinance)
Watana Completed with $2.4 billion (1.4) of GO Bonds 1991 –93
Cover of 1.25 at 107 Mills and Allows Revenue Bonds Refinancing
1994. Excess Cover Contributes $.65 billion Total to Devil Canyon Cost
Devil Canyon Completed with $4.4 billion (1.6) of Revenue
Bonds 2000 – 2005 (Massive Cover Potential in 2005)
Susitna "Price"
94
5
6
7
8
9
2000
01
02
03
04
05
06
07
08
09
2010
11
12
13

Advantages of G.O. Bond Route in $1.5 bn minimum State contribution scenario.

- Avoids requirements for completion guarantees (if G.O. bond of sufficient magnitude).
- Can maintain tax exempt status by less output having to meet "take-or-pay" etc.
- Creates scope for resolving Revenue Bond tax exempt status by deferring problem until project complete and with demonstrable revenue record.
- No requirement for excess debt service coverage.

ACRES

	7%, Inflation, 10% Interest		9%, Inflation, 12% Interest	
1982	$1.5 bn State Appropriation Bond Financing		$1.5 bn State Appropriation Bond Financing	
	Money	Real	Money	Real
1989	.4	.24	.5	.30
90	1.6	.90	1.9	1.06
91	1.5	.79	1.8	.95
92	1.0	.49	1.3	.64
93	.8	.37	1.1	.50
94	.2	.09	.3	.13
Total Watana	5.5	2.88	6.9	3.58

ACRES

0023

TAX EXEMPT STATUS

- o SI03.4 SPECIFICALLY REQUIRES G.O. BONDS TO MEET SECURITY INTEREST TEST.

- o SECTION 5 FORMULAE:TAX EXEMPT STATUS IS LOST IF CONTRACTS WITH NON-EXEMPT ENTITIES MEETS CONDITION THAT -

BUSINESS TEST	SECURITY TEST
PAYMENTS UNDER CONTRACTS EACH TAKING 25% OR MORE OF OUTPUT + PAYMENTS UNDER CONTRACTS GUARANTEEING 3% OR MORE OF DEBT	25% OF DEBT SERVICE

ACRES

- TAKE-OR-PAY AT WHOLESALE RATE (UNSPECIFIED) PREVAILING IN FUTURE IS NOT A GUARANTEED MINIMUM PAYMENT (?).

- RESTRICT ALL SUCH "TAKE-OR-PAY" TO 25% OR LESS OF SUSITNA OUTPUT SO THAT CONTRACTS MEETING 25% PART OF "BUSINESS TEST" ARE ZERO.

- CONTRACTS MEETING 3% GUARANTEED MINIMUM PART OF "BUSINESS TEST" ARE ALSO ZERO.

- SECURITY TEST SUMMING CONTRACTS MEETING EITHER OF PREVIOUS TWO CRITERION ALSO ZERO.

- HENCE BONDS NOT I.D. AND ARE TAX EXEMPT.

- PROBLEM: HOW MUCH WOULD ABSENCE OF GUARANTEED PAYMENT IMPAIR SECURITY FOR BOND HOLDERS?

LEAST BURDEN STATE "REPAYMENTS"

- RESIDUAL INTEREST = CONTINUATION OF DS CHARGE AFTER FULL REPAYMENT OF
  = $.75 BN P.A. BUT 1994 PW = $.27 BN TOTAL

- SUBORDINATED ROYALTY BEGINNING AT COMPLETION OF DEVIL CANYON

  1% = $.29 BN 1994 PW

- SUBORDINATED CLAIM TO EXCESS DS (.25) 1994-2004

  (NEGLIGIBLE EARLY YEAR BURDEN SINCE JUST INCREASES CAPITALISED INTEREST ON DEVIL CANYON)

ACRES

(1)

ACRES AHG

ACRES TOR

Out
Dec 31/81

DECEMBER 31, 1981 P5700.11

ATTN: BOYD BROWNFIELD

WE WOULD BE MOST INTERESTED TO LEARN PRICE LEVEL AND ESCALATION PROVISIONS IN KOREAN CONTRACT. ALSO WOULD BE INTERESTED IN RECEIVING WHATEVER INFORMATION IS ACCESSIBLE THROUGH GVEA REGARDING DETAILS OF ESCALATION PROVISIONS AND THEIR APPLICATION WITH PARTICULAR REFERENCE TO ANY PASSING ON OF BENEFITS ARISING FROM PRODUCTIVITY SAVINGS. COULD BOB HUFFMAN ADVISE ON HIS EXPERIENCE AS RELATED IN HIS MEMO 29TH MAY 1981 TO CHUCK SITKIN REGARDING COAL PRICES WHICH WAS COPIED TO ERIC YOULD AND STATES. QUOTE...''I HEAR BY THE GRAPEVINE THAT USIBELLI COAL CO INFORMED WARD SWIFT OF BATTELLE THAT IN CALCULATING FUTURE ADJUSTMENTS OF COAL PRICES THAT ONLY ACTUAL INFLATION INDEX ADJUSTMENTS SHOULD BE USED. IF MY INFORMATION IS CORRECT, THE ALTERNATIVE RAILBELT STUDY MAY BE USING ERRONEOUS INFORMATION.

HERE ARE THE FACTS. AS OF JANUARY 1, 1965, OUR COAL PRICE WAS 27.85 CENTS PER MBTUS. IT IS NOW DLR 1.123 PER MBTUS. THEREFORE, COAL INCREASED 303 0/0 OVER THE BASE PRICE COVERING A 16-PLUS YEAR SPAN.

THE INDUSTRIAL COMMODITY INDEX WAS 132.2 ON JANUARY 1, 1965 AND IS 298.9 AS OF APRIL 1, 1981. THEREFORE THIS MEASURE OF INFLATION SHOWS 125 0/0 OVER BASE. ACCORDINGLY, COAL PRICES HAVE ESCALATED 177 0/0 MORE THAN INFLATION DURING THE SAME PERIOD OF TIME.

(2)

IN ADDITION, I UNDERSTAND THAT PROVEN RESERVES IN THE USIBELLI/ NENANA FIELD APPROACH 100 MILLION TONS. USIBELLI NOW MINES 750,000 TONS ANNUALLY, THEREFORE, AT THE PRESENT RATE OF PRODUCTION, HE HAS A 100 YEAR SUPPLY. HOWEVER, IT LOOKS FAVORABLE AS TO HIS DEVELOPMENT OF AN EXPORT MARKET APPROACHING ONE MILLION ADDITIONAL TONS WITHIN THE FOLLOWING TWO TO THREE YEARS. AT THAT TIME HE HAS 50-PLUS YEAR SUPPLY. IF WE WERE TO ADD A SUSITNA SIZE COAL PLANT OF 1,500 MW IT WOULD USE APPROXIMATELY EIGHT MILLION TONS ANNUALLY. NOW WE HAVE A 10 YEAR SUPPLY. IN MY ESTIMATION, THAT IS NOT AN ALTERNATIVE TO SUSITNA.'' END QUOTE.

J.G. WARNOCK

ACRES - TORONTO

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ACRES TOR

ACRES

December 31, 1981
P5700.11
T-1388

Mr. E. P. Yould
Executive Director
Alaska Power Authority
334 West 5th Avenue
Suite 31
ANCHORAGE, Alaska 99501
U. S. A.

Dear Eric,

Further to our conversation this week regarding the proposed meeting with Battelle N.W. I spoke today with Jay Jacobsen who has readily agreed to the discussions planned for January 5th. These will be held in Richland, Washington and we plan to be at Battelle offices by 9:00 a.m.. Our group will include Dr. A. J. Merrett, Dr. J. W. Hayden and S. Diener and myself.

The impression I gain from the brief discussion with Jay is that they are ready to be guided by the opinions we have to present and relate their present position to that defined by Ward Swift admitting that they do not have full support readily available. We would hope therefore, to be able to reach a common position on this issue.

In view of the increasing importance of achieving reliable figures for fuel pricing we would suggest that APA should be represented at the meeting and wonder whether you would wish to have Bob Mohn take the chair. I propose discussing this possibility by phone later this morning.

The agenda we propose for the Richland meeting is:-

1) Objective of Meeting

2) Fuel pricing - Railbelt Alternatives

2) (a) Statement of findings and definition of areas of agreement/disagreement

- Acres
- Battelle

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ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525

2)(b) Outstanding issue for discussion
- Methodology
- Factual data
- Probabilities

2)(c) Statement of common position

3)(a) Review of current status of generation planning work
(i) Battelle/AREEP
(ii) Acres/OGP-5

3)(b) Further analytical work

4) Treatment of construction cost/operating expense escalation provisions

5) Program for future interactive consultation

We would be glad to have your approval of the outline.

Happy New Year!

Yours sincerely,

J. G. Warnock
Vice President
Corporate Development

JGW:dn

cc: J. D. Lawrence
P. Hoover

P5700.11

December 31, 1981

Anchorage Office
Telecopy

Attn: Bo Brownfield

For ~~noward~~ ONWARD delivery to E. P. Yould a.s.a.p.

J. G. Warnock
Acres - Toronto

Tom,

Enclosure effective approx
at 1000 P.M
our time

Thanks Dale

DRAFT NOTES

December 31, 1981

MARKETING AND FINANCING REPORT LINKAGE

The Marekting Report must lock into the Financing Report in that the latter is predicated on the revenues dervied from the marketing scenario. We have established that the long-term financial costs of the best thermal option are as shown on the attachment. In aggregate therefore, the Alaskan utilities should be willing to meet a maximum price for Susitna equal to the costs which they would otherwise incur from this best thermal option.

The APA, however, are obliged to charged a single wholesale rate and therefore, is in a position that the price it can charge is restricted by what the least willing customer will pay. For our marketing/financing scenario to hold it is necessary that we demonstrate that under this pricing constraint the APA can still get revenues equal to the best thermal option.

There is presumative evidence that this is the case because the big thermal additions called for by the best thermal option primarily serve Anchorage and thus would create high cost incremental sources of supply for Anchorage. At the same time Fairbanks is already a high cost area and should be more than willing to accept supplies at the starting price of 139 mills.

To consolidate (or if necessary modify) this impression the Marketing Report needs to have a section estimating the generation cost curves of Anchorage and Fairbanks on the best thermal option basis. This we would hope would demonstrate the conclusion just reached that these two main utility areas ought to be willing to accept Susitna supplies at 139 mills.

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This we might describe as the "shadow" scenario since it will not come into being if Susitna goes ahead, but it will be a point of reference around which the Susitna price must be negotiated.

The second, scenario is the "Susitna anticipation scenario" which would describe the actual generation cost curves of Anchorage and Fairbanks utilities as they would arise over the period 1994 to say, 1995 given that the utilities will have anticipated the coming of Susitna and there power generation capacity will have been organised optiminally in accordance with this expectation. It is to be expected that this would give rise to incremental costs (having regard to risk of outage etc.) which over the 5 year period would be in excess of the price at which Susitna energy would be offered so that this cost scenario would not conflict with our estimation as to the prices at which Susitna could sell its energy.

Problems would arise, of course, if this "Susitna anticipation scenario" nevertheless led to highest costs of energy over the five year period 1994 to 1999 being less than the 139 mills estimated for Susitna. If this cost configuration does emerge from the OGP-5 runs which correspond to the Susitna anticipated generation plan then it would have to be met by appropriate horse-trading by the APA with the utilities. (We could enlarge on this if this eventuality does emerge from the figures).

A point to be stressed throughout these scenarios is that the cost numbers which we require are financial costs in then current money and not economic costs. The costs which would be incurred by the utilities in respect of financing any additions should be assumed to be 10% in money terms and throughout we ought to base the analysis on 7% inflation.

....3

The last possible deadline for this part of the marketing study is Friday the 8th of January when we hope it would be possible for Columbia to telecopy the results through to Toronto ready for a meeting if necessary in Columbia on the 11th of January to pull together the interrelated elements of marketing, economics and financing.

ACRES COLB

OUT
Dec 31/81

ACRES TOR

DECEMBER 31, 1981 P5700.11

ATTN: P. HOOVER

RE: SUSITNA TELECOPIER RUNS FOR ALL THERMAL CASE RECEIVED

IN FUTURE WOULD HOPE THAT THESE SHOW 1992 AS BEING THE LAST YEAR IN WHICH SYSTEM IS UNAFFECTED BY ADDITIONS OF NEW PLANT AND THEREFORE PROVIDES A USEFUL BASE FOR DETERMINING THE AVOIDED COST OF EXISTING GENERATION.

WE HAVE AGREED THAT YOU WILL LET US HAVE (1) CHACKAMNA RUNS (2) WATANA/DEVIL CANYON RUNS WHEN DEBAGGED (3) A RE-RUN OF THE ALL THERMAL CASE WITH INPUT OF SOME PARAMETERS USED FOR FINANCIAL ANALYSIS AS OUR NOTE OF DECEMBER 23RD. (4) REPEAT OF (3) WITH ESCALATION FACTORS ON CONTINUATION COST AND OPERATING EXPENSES (4) REPEAT OF YOUR BASE RUN WITH ESCALATION FACTORS INTRODUCED. LATER WE WILL REQUIRE REPEATS OF (2) AND (4) WITH FINANCIAL PARAMETER INPUTS 70/0-10 0/0.

COULD YOU PLEASE INDICATE EARLIEST TIME OF DELIVERY OF EACH ITEM AS DATA REQUIREMENTS FOR MEETINGS IN WEEK OF JANUARY 4TH NOW CRUCIALLY IMPORTANT.

HAPPY NEW YEAR.

GAVIN

ACRES - TORONTO

ACRES COLB

ACRES TOR

FIRSTCORP NYK

ACRES TOR

DECEMBER 30, 1981 P5700.11.21

Out
Dec 30/81

FIRST BOSTON CORPORATION

NEW YORK, NEW YORK

ATTN: JOHN RABEN, VICE PRESIDENT
PUBLIC POWER FINANCE GROUP

RE: SUSITNA

WE ARE CONTINUING OUR STUDY OF FINANCING ISSUES RELATED TO SUSITNA HYDROELECTRIC DEVELOPMENT AND IN PREPARATION FOR MEETING WITH APA ON 7TH JANUARY. WE WOULD WELCOME YOUR CONSIDERED OPINION ON FOLLOWING QUESTIONS ARISING FROM OUR READING OF IRS CODE SECTION 103:-

IT IS OUR READING THAT IN ORDER TO LOSE TAX EXEMPT STATUS FOR FINANCING OF THE PROJECT IT WILL BE NECESSARY TO FAIL BOTH

(REPEAT BOTH) THE TRADE OR BUSINESS TEST AND THE SECURITY TEST.

WOULD IT BE POSSIBLE FOR US TO ACHIEVE TAX EXEMPT STATUS FOR BONDS BY:-

1) CONTRIVING TO FAIL THE FIRST PART OF TRADE OR BUSINESS TEST BY ENSURING THAT NO TAX EXEMPT ENTITY UNDERTAKES TO TAKE-OR-PAY FOR MORE THAN 25 0/0 OF OUTPUT. THIS COULD BE DONE BY ARRANGING FOR CHUGACH - THE ONLY ENTITY CAPABLE OF CONTRACTING FOR MORE THAN 25 0/0 - TO CONTRACT FOR LESS THAN 25 0/0 OF SUSITNA OUTPUT (THIS WOULD MEAN, HOWEVER, THAT 10 0/0 OR SO OF SUSITNA'S OUTPUT WOULD NOT BE COVERED BY ''TAKEAOR-PAY'' CONTRACTS')

2) THEN, ALSO CONTRIVING TO FAIL THE SECOND PART OF THE TEST (CONDITION 5(A) 2) THAT ''NO TWO OR MORE NON-TAX EXEMPT PERSONS EACH OF WHICH PAYS ANNUALLY A GUARANTEED MINIMUM PAYMENT EXCEEDING 3 0/0 PER CENT OF THE AVERAGE ANNUAL DEBT SERVICE....'' BY SOMEHOW AVOIDING THE CONCEPT OF AN ''GUARANTEED PAYMENT'' WITHIN THE MEANING OF THE IRS CODE.

WOULD IT BE POSSIBLE IN YOUR OPINION TO INTRODUCE TERMS INTO THE TAKE-OR-PAY CONTRACT WHICH IN FORM MAKE IT NOT A GUARANTEED A GUARANTEED MINIMUM PAYMENT OBLIGATION WITHIN IRS MEANING OF THIS TERM. FOR EXAMPLE, THIS MIGHT BE ACHIEVED BY A TAKE-OR-PAY CONTRACT WHICH WAS CONDITIONAL UPON OUTAGE NOT EXCEEDING XO/O (WHERE X IS, IN REALITY AN ALMOST TOTALLY UNLIKELY LEVEL OF OUTAGE) OR UPON SOME OTHER ADDITIONAL IMPROBABLE CONDITIONS.

WE WOULD LIKE YOU TO COMMENT ON WHETHER SUCH A QUALIFIED CONTRACT COULD BE DEVELOPED WHICH BY INSERTION OF SUCH CONSIDERATION WOULD MEET BOND HOLDERS CONDITIONS WHILE ENABLING US ''TO FAIL'' CONDITION 5(A)1. FURTHERMORE IT WOULD BE USEFUL TO HAVE AN EXPLANATION OF THE ESSENTIAL DIFFERENCE IN IRS VIEW OF ''A TAKE-OR-PAY CONTRACT'' AND ''A GUARANTEED MINIMUM PAYMENT''.

ANSWERS TO THESE QUESTIONS WOULD BE WELCOMED AS SOON AS POSSIBLE AS THEY WOULD ASSIST US IN FORMULATING A POSSIBLE APPROACH INVOLVING INITIAL G.O. BOND FUNDING CONVERTING LATER TO TAX EXEMPT REVENUE BOND FINANCING FOR SUSITNA.

WITH VERY BEST WISHES FOR THE NEW YEAR.

REGARDS

J.G. WARNOCK

ACRES - TORONTO

FIRSTCORP NYK

ACRES TOR

Switching Position Statement 21st Dec 1981.

State Appropriation $bn	Financing - $bn. GO	Revenue Bonds	Total	Debt Service 1994 DS/C B/E	All Revenue
1.5 7%. Int + 10%. Int CB = 1.59	12.6	12.4	12.7	0.84 1998	2001
1.5 9%. Int + 12%. Int CB = 1.59	17.5	17.1	17.6	0.78 1998	2002
2.5 7%. Int + 10%. Int CB = 1.59	2.9	6.8	7.1	183 1994	2001
2.5 7% Int + 10%. Int CB = 1.59.	5.4	9.5	9.9	1.65 1994	2001

1. Assumes Switching Output Sold at following mill rates & quantities

	1993	94	95	96	97	98	99	2000	2001 ... 2010
Energy	2000	3315	3320	3325	3330	3335	3340	4770	6060 ... 6580
M.U Rate -									
7% mfl.	51	139	144	150	156	190	198	179	268 ... 381
9% mfl.	64	192	200	209	219	269	283	255	407 ... 631

2. Mill Rate based on existing and scheduled following installations & costs (Jan '82 dollars)

For.		CAPITAL COST $million	ANNUAL COSTS: CAPITAL RENEWALS	FIXED O&M /KW	VARIABLE O&M	COAL
1994	400 MW - Beluga	1056*	.35%	16.83 /KW	0.6 mills	13.6 mills
1998	210 MW - Gas	132	-	40 /KW	-	-
2000	200 MW - Beluga	564*	.35%	16.83 /KW	0.6 mills	13.6 mills
2001	250 MW - Nenana	632x	.35%	16.83 /KW	0.6 mills	16.1 mills

* includes $60 million transmission and 20% increase for seismic effects
x includes 20% increase for seismic effects.

Susitna Position Statement 21st Dec 1981.

State Appropriation $bn	Financing - $bn. GO	Revenue Bonds	Total	Debt Service 1994 DS/C B/E	All Revenue
1.5 7%. Inf + 10%. Int CB = 1.59	12.6	12.4	12.7	0.84	1998 2001
1.5 7%. Inf + 12%. Int CB = 1.59	17.5	17.1	17.6	0.78	1998 2002
2.5 7%. Inf + 10%. Int CB = 1.59	2.9	6.8	7.1	1.83	1994 2001
7% Inf + 10%. Int. CB = 1.59.	5.4	9.5	9.9	1.65	1994 2001

1. Assumes Susitna Output Sold at following mill rates & quantities

	1993	94	95	96	97	98	99	2000	2001 ... 2010
Energy	2000	3315	3320	3325	3330	3335	3340	4720	6060 ... 6580
M.U Rate - 7% infl.	51	139	144	150	156	190	198	179	268 ... 381
9% infl.	64	192	200	209	219	269	283	255	407 ... 631

2. Mill Rate based on electric load service of following installations & costs (Jan '82 dollars)

For.		CAPITAL COST $million	ANNUAL COSTS: CAPITAL RENEWALS	FIXED O&M	VARIABLE O&M	COAL
1994	400 MW - Beluga	1056.*	.35%	16.83/KW.	0.6 mills	13.6 mills.
1998	210 MW - Gas.	132.	-	40 /KW	-	-
2000	200 MW - Beluga	564*	.35%	16.83/KW.	0.6 mills	13.6 mills
2001	250 MW - Nenana.	632x	.35%	16.83/KW.	0.6 mills	16.1 mills.

* includes $60 million transmission and 20% increase for seismic effects.
x includes 20% increase for seismic effects.

EXHIBIT 5

Inflation 7%, Interest 10%

Appropriation	$1.5bn		$2.5bn	
	GO Bonds $m	Rev. Bonds $m	GO Bonds $m	Rev. Bonds $m
1989	0.4	-	-	-
90	1.6	-	-	-
91	1.5	-	1.1	-
92	1.2	-	1.0	-
93	1.1	-	0.8	-
94	0.5	-	(2.6)	2.9
95	0.5	-	-	0.2
96	1.1	-	0.7	0.1
97	1.2	-	0.8	0.2
98	1.1	-	0.6	0.3
99	1.2	-	0.5	0.3
2000	0.8	-	-	0.2
2001	(12.3)	12.4	(2.6)	2.6
2002	-	-	-	-
TOTAL	0.2	12.4	0.3	6.8

Inflation 9%, Interest 12%

$1.5bn		$2.5bn	
GO Bonds $m	Rev Bonds $m	GO Bonds $m	Rev. Bonds $m
0.5	-	-	
1.9	-	-	
1.8	-	1.4	
1.6	-	1.3	
1.4	-	1.1	
0.8	-	(3.4)	3.7
0.7	-	-	0.3
1.6	-	1.0	0.1
1.9	-	1.2	0.1
2.0	-	1.2	0.1
1.9	-	1.1	0.1
1.3	-	0.4	0.1
(13.8)	13.9	(4.9)	5.0
(3.2)	3.2	-	-
0.4	17.1	0.4	9.5

NB Net GO Bonds outstanding in 2002 are to finance working capital

00250

Stinson Coal Price & Supply

(Inflation 7%, Interest 10%)

21 Dec 81

	PRICE. mills per KWH	ENERGY MWH
1993	~	2000
1994	139.31	3315
1995	144.46	3320
1996	150.11	3325
1997	158.32	3330
1998	189.86	3335
1999	198.25	3340
2000	178.53	4720
2001	267.55	6060
2002	275.92	6120
2003	285.42	6170
2004	295.58	6230
2005	306.73	6290
2006	318.96	6350
2007	332.36	6410
2008	347.03	6470
2009	363.19	6525
2010	380.82	6580
2011	401.37	"
2012	423.66	"
2013	447.85	"
2014	474.08	"

Average Escalation

1994 – 1999 (5 yrs.)	7.3%	p.a.
1994 – 2002 (8 yrs)	8.9%	p.a.
2002 – 2012 (10 yrs)	4.4%	p.a.

File

P5700.11

MEMORANDUM

To: Mr. J.D. Lawrence

December 28, 1981.

cc: Mr. C.A. Debelius
Mr. P. Hoover
Mr. S. Diener
Mr. A.J. Merrett

From: J. Gavin Warnock

Re: Susitna Hydroelectric Project
Task 11 - Marketing and Financing
Meeting with APA, December 3-4, 1981

The attached notes record the discussions with APA at our meetings in Anchorage, December 3 - 4, 1981. These notes will have had a limited internal circulation and I leave it to you to decide on any wider distribution.

JGW/JC
Att.

J. Gavin Warnock

0025

file

MEMORANDUM

P5700.11

To: Mr. J.D. Lawrence

December 28, 1981.

cc: Mr. C.A. Debelius
Mr. P. Hoover
Mr. S. Diener
Mr. A.J. Merrett

From: J. Gavin Warnock

Re: Susitna Hydroelectric Project
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JGW/JC
Att.

J. Gavin Warnock

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

Anchorage offices of APA
December 3-4, 1981

TASK 11 - MARKETING AND FINANCING

Meetings with:-

E. P. Yould, T. McGuire - APA
J. D. Lawrence, A. J. Merrett,
J. G. Warnock - AAI

1) Loan guarantees fund concept questioned by T. McGuire on basis that it would not be allowable under IRC Section 103. It was believed that debt service guarantee funds were limited to 15% of debt covered and subject to certain roll-over provisions on a 5 year basis.

(This issue was later cleared-up with APA bond counsel and limitation found not necessarily to apply).

T. McGuire of opinion, furthermore, that State funds would best be applied directly to construction expenditures as soon as convenient but accumulating interest while on deposit. With current revenue constraints State funds were quite likely to be made available in a pattern of:-

$250 M	in year	1
$250 M	" "	2
$350 M	" "	3
$350 M	" "	4
etc.		

Limitations were noted on the capability of funds available from the State to provide either for:-

(a) Substantial amounts of expenditures in the early years of construction (or prior to, start of construction).

(b) Large front-end deficits occurring when Susitna comes into operation.

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T. McGuire suggested that any IRC limitations which did apply were unlikely to be amended, particularly for the State of Alaska and with the present administration in Washington.

T. McGuire, was in any case, of the opinion that senior lenders would prefer to see a situation where, say, 30% to 35% of total capital cost, by way of State funds, were committed to construction rather than held in reserve at time debt was drawn down. It was suggested that any required bond reserve fund to meet debt service should simply be borrowed from senior debt accumulations.

Discussions on relative magnitude of State funding in relation to estimated capital cost and to likely need for ultimate funding showed no misunderstanding on the part of APA regarding the "plus-up" for inflation, IDC etc. The Exhibit demonstrating this which accompanied Acres letter of November 27th, (copy attached hereto), did not raise any surprise.

2) Deep concern was expressed by Eric Yould over the security of the "capital cost not to be exceeded". Figures mentioned in discussion of the "optimisation" process caused concern with APA who saw a distinct trend towards excedence of the limiting cost, stated as $4.9 billion.

(It should be noted that $4.9 bn is, in fact, the initial "cost not to exceed" telexed in March 1981 and subsequently amended, with an increase to $5.11 bn, in May 1981. It will be appreciated furthermore that this cost has been subject to inflationary effects since that date).

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John Lawrence explained that the optimisation efforts at present in hand were directed at determining the ideal project with maximum energy output to ceiling cost. However, the capital costs estimate still contains a 20% contingency allowance which may ultimately be reduced. The necessity of holding to the limiting cost ceiling was clearly understood.

Discussion ensured on level of confidence of the "capital cost not to exceed". Risk analysis would play a part in determining such confidence levels. Constraints of "cost not to exceed" and of "financing limitations" were noted. Considerable criticism has been leveled at the performance to date on capital cost estimating for hydroelectric developments in State of Alaska. There would be very serious problems for Susitna if confidently-stated estimates were to be exceeded in any similar way. Every attempt has to be made to keep Susitna cost estimates both reliable and within declared limits.

Explanation by Acres of the optimisation process identified three reservoir levels of 2215 ft., 2165 ft., and 2115 ft., which had been examined in recent studies and estimates. Maximum energy output was, naturally associated with the highest achievable level of Watana reservoir. Energy outputs were likely to be affected by environmental constraints and any required downstream water releases. Three conditions had been examined; one without constraints; one with

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full effect or constraints and a third - a compromise believed reasonalbe and, hopefully, acceptable by A.D.F. & G. and other agencies.

Dam height variations have a marked effect on overall capital costs, equivalent to about $700 million for 100 feet of dam. Half, of this cost variation was attributable to dam construction costs and the remainder to the influence of such change on other elements of the project and support facilities.

It was noted that financing limitations had not yet been brought to bear on the selection of an optimum project. From Task 11 studies - Financing, it was becoming apparent that, with the less generous State funding arrangements, now contemplated reductions from the stated "cost not to exceed" would be required to achieve assured viability.

3) Other limitations to financing Susitna was discussed including the applicability of tax exempt revenue bonds to a project which did not meet the business test whereby not more than 25% of the output may be contracted with a tax exempt purchasing entity. APA could see that of total output being supplied to the Railbelt 55% would be contractable within the limits of the business test and 45% would not. The concept of having 45% of the project covered by funding from the State was discussed and arrangements made to obtain advice from Wohlforth & Flint, APA Bond Counsel, on this matter.

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(A later meeting established that this approach was unlikely to be accepted by IRS, but subsequent examination of IRC Section 103 suggests that provided no single non-tax exempt entity takes 25% of the output on a take-or-pay contract the aggregate of all tax exempt entities contracting may be able to take more than 25%).

In the absence of access to tax exempt revenue bonds, however, consideration would have to be given to General Obligation Bonds of the State of Alaska (G.O. bonds). A report was available on State government financing and on the options open to State agencies and bodies such as APA. It was recommended that further advice should be sought from Bond Counsel.

Dr. Merrett raised the matter of "no-coupon" bonds or "deep discount" bonds. Eric Yould did not see fundamental objections to such paper but warned of the impact of non-conventional bonding on the overall State bond ratings.

It was agreed that there were no strict limitations applying to the mode of bond financing and Acres were free to suggest whatever was believed appropriate and optimal to project viability.

4) Legislative action was at present being processed which would possibly lead to a referendum procedure for all major allocation of funds. It was recognised that such a measure could only have an adverse effect on Susitna financing and impose dangers of delay in timely funding and possibly interruptions in the execution of State committments. Hopefully Susitna would be excluded from referendum

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procedures but the situation would have to be carefully watched during the next few months while the Phase 1 efforts were being concluded.

5) Other items relevant to financing were discussed:-

- Account format for Acres analysis output should be checked with certified public account such as Coopers & Lybrand or Peat Marwick.
- Prior bond placement documents issued on behalf of the APA were not truly relevant to Susitna.
- Acres stated that "renewals and replacements" allowance of 3/4% of capital costs (escalated) was based on prior experience on other hydroelectric projects. It was noted that actual requirements would be reviewed in detail. The allowance made at present is conservative.

  (Later examination of Acres financial analysis showed 3/4% applied to non-dam portion of Watana equivalent to about 0.4% on overall costs as compared with 0.2% recommended as standard accounting practice by FERC).

- Allowance for "Reserve and Contingency" was presently being taken as 400% of annual operating costs. The level of this funding parameters as stated in attachment to Acres letter of November 27th 1981 were reviewed and revisions made as recorded on the amended table attached.
- The only likely impact on the legislated "Power Cost Assistance" provisions on Susitna could be a requirement that the Project contribute to the fund (at a level

....7

of about $9.2 in 1982 dollars escalating at the predicted rate for fuel costs of 2.6% above a 7% general inflation i.e. 9.6% p.a. in all). It is unlikely that any consumers in Railbelt utility area would benefit from this fund.

- Recently concluded contractual arrangements to meet tax exempt bond requirements should be examined.
- First Boston Corporation and Wolforth & Flint will be available for consultation. APA will advise AAI on the status of First Southwest Corporation in further financing studies.

6) Revenue earning projects for Susitna have a critical influence on financial viabilty. Approaches to the analysis to date have determined a likely "entry price" for Susitna energy to its market at the level of avoided cost to the system. This price level has been determined both by analysis of overall system costs at the time Susitna comes on-power and by comparison with the most likely alternative, a 100 MW/200 MW coal burning thermal genrating plant. Revenues have been computed based on 1993 price levels of 135 mills/Kwh to 150 mills/Kwh with test analaysis at 120 mills/Kwh.

It is recognised that these 1993 energy avoided cost/price levels will be substantially influenced by alternative energy costs determined largely by fuel-costs but also heavily influenced by the capital costs of thermal generating plant. Recent figures made available by Battelle from their alternative energy studies showed energy costs substantially lower than previous indicated levels and lower than the assumptions on which generation planning had been based.

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Both the current cost levels attributed to fuels and the related escalation rates deserved most careful review and a determination of the confidence level with which they were offered. AAI would review and discussion was recommended with Dale Teale and Harold Schmidt of AGSC who were particularly interested in the relief which may be offered to them by early contribution of Susitna.

7) A program for future meetings was discussed:-

Jan 12/13 - Possible attendance by AAI at meeting in Anchorage

Jan 14/15 - Meetings in Seattle with Battelle, AAI, APA and Dr. Rohan. Topics for discussion would include load forecasts, gas fired-generation options, energy costs, escalation forecasts, alternatives to Susitna financing and project economics.

First Week Feb - Initial issue of draft report to APA

Mar 15 - Draft feasibility study to APA (a six week period is anticipated for review and public/ agency briefing with possibly 3 public meetings.)

Mar 15-31 - Briefing by AAI to APA Board

- Briefing by APA External Panel to APA Board

8) AAI submission of revised scope of work under cover of letter November 27th was reviewed. Scope agreed omitting only Work Package D as defined under Marketing concerning "Influence of Power Cost Assistance Legislation".

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The level of effort was agreed as:-

Task	Manhours	Consultant	Computer Expenses
Financial Analysis	1192	68 m/days	$ 7500
Marketing	951	12 m/days	$ 1500
Risk Analysis	2400	-	$ 4000
Totals	4543	80 m/days	$13000

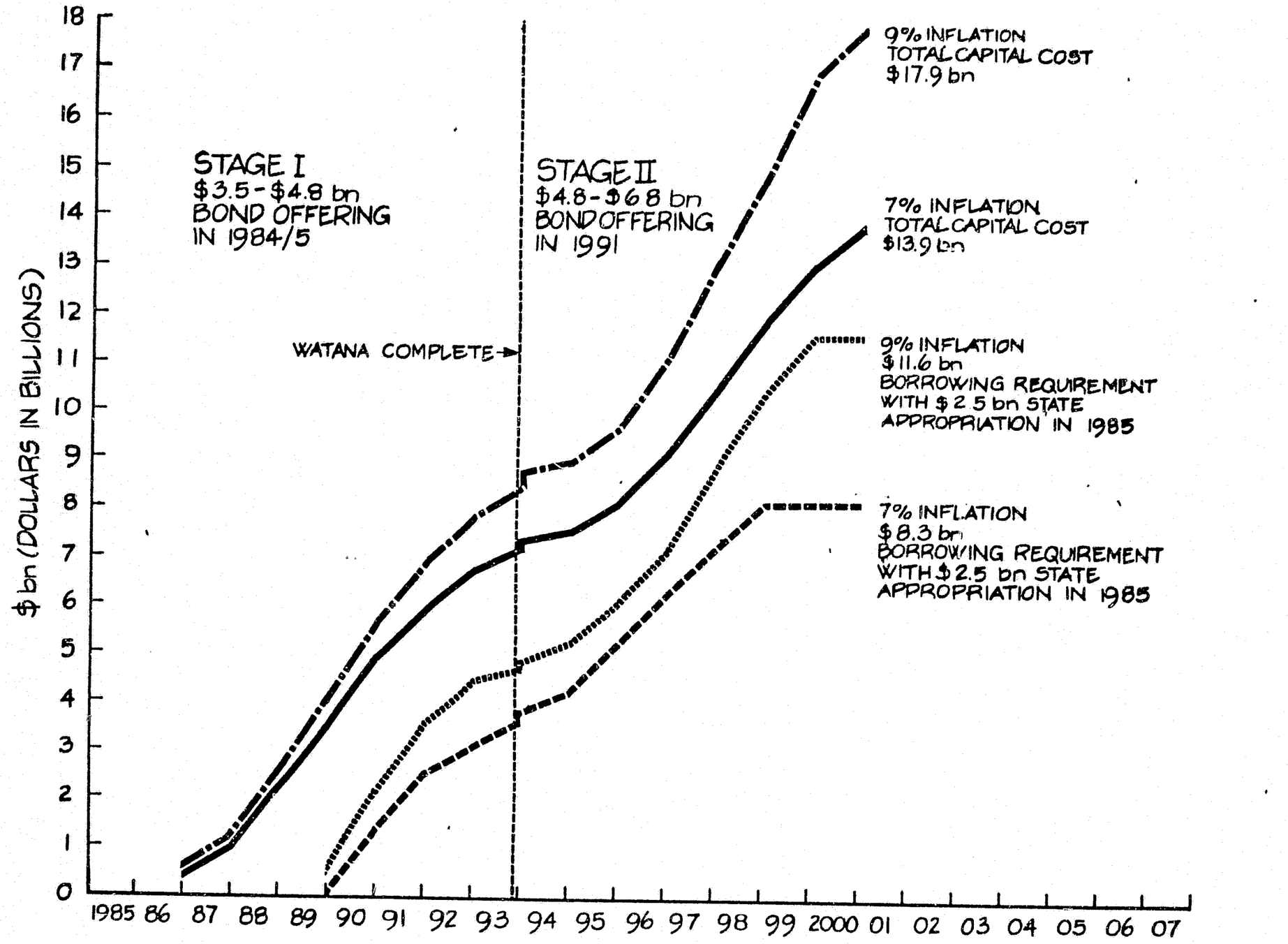
(Note:- other expenses not included)

Costs to complete as agreed in Contract Amendment #2 are $491,025 (including escalation). It was recognised that the above level of effort converted to total billings is less by a margin of 10%, than this amount. Every effort will be made to retain this difference as a contingency.

SUSITNA HYDROELECTRIC PROJECT
TASK 11 - FINANCIAL ANALYSIS

(Attachment A to letter of November 27, 1981 amended at APA/Acres meeting December 4, 1981)

		Low	Median	High	"Test" Values
(a)	% Funding of the total project cost from State of Alaska	30	50	70	
(b)	% ROI on State funds (employed for test of financial viability only)	5	5	5	5
(c)	% Interest rate on senior debt funds		12	14	12 and 14
(d)	Senior debt maturity (with interest and principal payments levelised over period commencing one year following the year of full plant operation) - years	35	35	35	35
(e)	Inflation rate %	7	7	7	7 and 9
(f)	Debt service cover applied to the annual requirements for levelised senior debt service		1.25		1.25
(g)	% Rate, applied to original capital cost, with allowance for inflation, at which "Replacement and Renewals" are provided	3/4	3/4	3/4	3/4
(h)	Inflation rate applied to construction costs during the period of construction	10	10	10	7 and 9
(i)	Inflation rate applied operating costs during the period of operation	8	8	8	7 and 9
(j)	"Reserve and Contingency" fund as a % of annual operating costs set aside and replenished year by year		not decided		400%
(k)	Committment and placement fees as bond financing costs		not decided		1/2% of bond value



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT
CAPITAL COST AND BORROWING REQUIREMENT

ACRES

SUSITNA - P5700
Marketing and Finance

December 23, 1981
via telecopier P. Hoover-Columbia
D.D. Lawrence - Buffalo

Summary of data from financial analyses conducted 12/14 to 12/23 to determine B/C ratio Susitna/thermal alternative and to test various financing plans:-

A) Capital costs $ millions January 1982 levels

Watana 1020 MW	$3698.6
Devil Canyon 600 MW	$1470.2
Beluga 400 MW	$1056.0
Beluga 200 MW addn	$ 564.0
Nenana 250 MW	$ 632.0

Beluga 400 MW and Nenana both include transmission at $72 million and are based on/KW capital costs increased by 20% above Battelle/ Ebasco figures.

B) 1 Expenditures by year % of total Susitna

Watana		D.C.	
1985	7.2	Year 1	5.8
86	9.2	2	8.4
87	8.7	3	8.1
88	8.4	4	5.9
89	14.6	5	18.3
90	22.3	6	19.2
91	16.5	7	18.0
92	8.2	8	12.5
1993	3.7	9	3.8

B) 2 Alternatives

Year	Beluga Two units	Beluga or Nenana One Unit
1	7.7	9.1
2	8.8	12.0
3	15.0	15.6
4	27.6	27.4
5	18.1	18.5
6	7.0	9.1
7	7.7	8.3
8	8.1	

B) 3 In addition to coal fired thermal additions the alternative to Susitna assumed to have 3 x 70 MW gas turbines added in 1998 at capital cost $198 million with only fixed O&M charged to system at $40/KW/year as equivalent to the spinning reserve capacity available from the 6 x 170 MW Watana station.

Beluga and Nenana charged $16.83/KW/year fixed O & M and 0.6 mills/KWh variable O & M.

B) 4 In above tabulations Devil Canyon year 9 corresponds either to 2000, or with delayed schedule to match reduced demand, 2004. Beluga 400 MW year 8 corresponds to 1994 and Beluga 200 MW year 7 corresponds to 2000 or to 2004 and Nenana 250 MW year 7 to 2001 or 2005.

B) 5 All capital costs are escalated in accordance with Battelle factors over and above general inflation rates.

C) 1 Coal costs are based on Acres reassessment which departs from Battelle estimates and lead to January 82 levels for fuel 13.6 mills/KWh - for Beluga and 16.1 mills/KWh for Nenana - escalating at rates percent:-

			(continues)
3.4 from	1982 to	1985	1.16 2030 to 2040
2.6	1985	1990	1.14 2040 to 2050
2.5	1990	2000	1.12 2040 to 2060
1.23	2000	2010	1.1 thereafter
1.17	2010	2030	

Note rates from 2000 onwards approximately equivalent to 1.2% .

C) 1 These coal prices result in energy costs from thermal power plants in then current dollars assuming 7%-10% scenario of.

	MWhe Equivalent Supplied (equivalent to Susitna)	Mills/KWh
1993	2000	51 (before coal fired addition)
94	3315	139 (Beluga added)
95	3320	144
96	3325	150
97	3330	156
98	3335	190 (NG turbines added)
99	3340	198

Above mill rates used as basis for Susitna revenues as Watana comes into service and if generating plant additions followed on schedule allowed by original demand, forecast would continue.

2000	4720	179	
2001	6060	268	(Beluga and Nenana added)
2010	6580	381	

We have also run 9%-12% scenario case which we believe may yet have to be seriously considered as providing the correct relationship of escalation and financing interest rates. This improves case for Susitna.

We appreciate that OGP-5 unlikely to call for thermal additions to provide energy outputs matching Susitna capabilities but we believe it gives viable basis for judging reasonable estimate of Susitna revenues.

C) 3 With reduced demand forecast additional plant or Devil Canyon can be delayed probably by 4 years or so and past 2000 picture.

2000	3340	208	
2001	3340	217	
2002	3340	227	
2003	3340	238	
2004	4720	220	
2005	6060	353	(Nenana added)

D) Financial analysis on above basis has established B/C ratio Susitna/thermal alternative of 1.59/1 for Watana 1994/DC 2000 on original demand schedule and above 1.56/1 for Watana 1994/DC 2004 on reduced demand. Watana alone B/C ratio is about 1.17/1.

Financing of overall project is made easier by 4 year deferment of DC.

E) While financial analyses involve different approach than OGP-5 we recommend a run conducted using same capital costs, schedules of expenditures, fuel costs and other relevant data. This could be viewed as test of sensitivity arising from variations in these factors from your assumed base case, but if not regarded as necessary for Task 6 at this time would recommend the run be made chargable to Task 11.

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1·024 + H&20 / H&20

Page 1

SUSITNA PROJECT.
INTERPRETATION OF COMPUTER PRINTOUT.
22 DEC 81.

There are 2 types of printout:-
(A) Data for cost benefit ratios
(B) Financing projections.

(A) Cost Benefit Ratios.

JOB1875 contains 1 case :- Watana alone.

JOB 1935 contains 4 cases for Watana & Devils Canyon on line 2004.
These are Inflation at 7%, Interest at 10%.
" " 9%, " " 12%
" " 7%, " " 12%
" " 9%, " " 10%

Output is in 'List' Format - that is values for every period, with 4 periods per line are given for an item before any values are given for the next item.
C1 (For column 1) is 1985.
C92 is the total over life.
In addition to 'column' values, each item has four 'Attributes' - A1, A2, A3, A4.

A.1. For Items 511 to 545 inclusive only the Attribute values are shown.
A2 is the NPV in real terms for whole life.
A4 is the equivalent mill rate.
Item 525 is HYDRO system TOTAL.
Item 545 is COAL " "
∴ For Cost Benefit Ratio, divide A2(545) by A2(525).

A.2. Items 271 to 278.

A3 is the annual debt service payment for the corresponding plant.

In the case of the gas plants (Item 274) it is the payment for the second replacement plant.
(See Note A.9 for earlier figures).

A.3. Items 525 and 545 are looked in full.
-These show the year by year cumulative NPVs for Hydro and Thermal system respectively.
Use these figures to determine cost-benefit ratios
Item 555 is the cum NPV of energy.

A.4. For the first case only:—
Item 305 Annual Energy.
" 83 Beluga Coal Price - Real Terms (For comparison with Steve Diners figures)
" 505 Annual escalation rate (real terms) for Coal price
" 81 Index for inflation
" 82 " for real coal price
" 101 " " " capital cost increases
" 102 " " " operating cost increases

A.5. Items 311 to 318 are the current dollar capital costs including interest for the various plants.
Items 321 to 328 are the current dollar capital costs before adding interest.

A.6. Item 590 Hydro system debt service - real terms
" 600 " " total cost "
" 90 Thermal system coal cost "
" 585 " " debt service "
" 595 " " total cost "
Thus Item 600 is the basis for the Hydro NPVs (Item 525)
and Item 595 is " " - " Thermal " (Item 545)

A.7. Item 596 - Thermal system operating costs in current dollars.
575 - " " debt service " " "
597 - " " total cost " "
598 - Hydro system operating costs in " "
599 - Cost for Hydro debt service. — ie. Using the thermal system total cost as revenue and deducting Hydro system operating costs.
580 - Hydro system debt service costs - current dollars.

Items 599, 580 can be used for one of the charts.

A.8. Items 581 to 569 are cumulative capital costs - with and without interest - in current dollars.
These can be used for another of the proposed charts.

A.9. Item 570 is the current dollar debt service charge for the Gas plants.

(B) Financing Projections. JOB 1951

B.1 Financing Assumptions.

B.1.1 The State Contribution occurs in 1982. Compound interest for 3 years is shown in 1985.

B.1.2. Loans. - There are 9 diffent potential 'loans'.
#1 is Watana GO Bonds for Construction
#2 is not used in this run.
#3 is D. Canyon GO. Bonds for Construction.
#4 is Watana Revenue Bonds for 1 year only.
#5 is Total Revenue Bonds
#6 is D. Canyon Revenue Bonds
#7 is Watana GO Bonds for Operating deficits
#8 is working capital loan — not used in this run.
#9 is short term debt - not used in this run.

B.1.3. Loan drawdown + repayment procedure.
All initial drawdowns in any year are GO Bonds.
At the end of the year the Debt Service Cover calculation is made based on that years revenue and total interest (re both capitalized and expensed).
Based on this calculation GO Bonds are 'transferred' to Revenue Bonds. (Loan 1 to Loan 4)
(Loan 3+7 to Loan 6)
After the first loan repayment of loans 4 or 6 as relevant, the balance is 'transferred' to Loan 5.

This Loans 1 to 3 plus Loan 7 are GO Bonds.
and Loans 4 to 6 are Revenue Bonds.

'Transfers' from GO Bonds to Revenue Bonds shown as negative drawdowns of GO Bonds.
Thus only Loans 4 to 6 are 'repaid'.

Interest on Loans 1 and 4 is capitalized to 1993, expensed from 1994.
" " " 3, 6 and 7 is " to 2004, expensed from 2005

B.2. Debt Service Cover Calculations

Four numbers are shown:

Item 382 Debt Service Cover - Cash.

= Operating Income before Interest. (Item 377)
less: Working capital required
Renewals expenditure
plus Debt Service Reserve Fund. (Ans. = Item 380)
(zero in these runs)
divided by:- Debt Service Payment (Item 381)

NB In these runs this calculation is made before the debt repayments are calculated and therefore is based only on interest.

Item 383. Debt Service Cover - Income. (only interest)

Operating Income before Interest (Item 377)
divided by: Debt Service Payment (Item 381).

NB as for Item 382

Item 511 Debt Service Cover - Before Transfer.

Operating Income before Interest	(Item 377)
less: Interest on working capital loan	(" 288)
Interest on GO Bonds.	(Item 385)
= 'Gross Before Tfr'	(Item 535).
divided by:-	
Revenue Bond Repayments	(Item 539)
plus. " " Total Interest (Capital + Expense)	(Item 386)
= 'Debt Service Bef Tfr'	(Item 537)

Item 512 Debt Service Cover - After Transfer.

Gross Before Tfr	(Item 535)
plus GO Bond interest transfer	(Item 533)
= 'Gross After Tfr'	(Item 536)
divided by:-	
Debt Service Bef Tfr.	(Item 537)
plus Rev. Bond interest transfer.	(Item 534)
= 'Debt Service Aft. Tfr'	(Item 538)

If the 'Gross Before Tfr' is greater than 1·25 times 'Debt Service Bef Tfr', then an appropriate amount is transferred.

In cases where Watana Bonds have not been converted to Revenue Bonds before D. Canyon construction begins - none will be until D. Canyon is producing revenue.

B.2. Revenue Calculations

Total revenue is calculated each year from the 'Thermal Cost' elements as shown on the Miscellaneous Details page.

The mill rate shown is determined by dividing total revenue by the energy. The downward blip in 2004 occurs because debt repayments on the second set of thermal plants do not begin until 2025, the first year of full energy output.

(NB Since this second set of plants includes 1 at Oakley & 1 at Mannona the capital cost streams should be separated)

COST BENEFIT RATIOS. (Real Terms) 22 DEC 81.

Interest 10%.

Net Present Values.	Inflation 7% (Inflation as Expected) HYDRO $m	Inflation 7% (Inflation as Expected) THERMAL $m	Inflation 9% (Inflation 2% Higher than Expected) HYDRO $m	Inflation 9% (Inflation 2% Higher than Expected) THERMAL $m
O & M.	493	1123.	493	1123
Renewals.	613	284.	613	284
	1106	1407	1106	
Coal	—	3634.	—	3634
Debt Service	4158	3207	3273	2593
TOTAL.	5264.	8249	4379	7634
Ratio Thermal: Hydro.	1·567		1·743	
Breakeven Year.	2029 (ie C45)		2021 (ie C37)	

Interest at 12%

Net Present Values.	Inflation 7% (Inflation 2% Lower than Expected)		Inflation 9% (Inflation as Expected)	
O & M.	493	1123	493	1123
Renewals	613	284	613.	284
	1106.	1407.	1106	1407
Coal	-	3634	-	3634.
Debt Service.	5267.	3959	4140.	3196.
TOTAL.	6374.	9001	5246	8237.
Ratio Thermal: Hydro.	1·412		1·570	
Breakeven Year.	2035 (C51)		2029. (C45)	

"Boxed" results are for consistent inflation/interest rate values (i.e. 7/10 + 9/12)

B For equivalent mill rates divide by 118·6.

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Xerox Hartcourt Stone

OFFICE MEMORANDUM

J. Lawrence
J. Hayden

Date: December 18,1981

File: P5700.14.06

OM: M.A. Hosko

cc: J.G. Warnock

JECT: Information from meeting with Battelle

Enclosed please find the following information:

- DRAFT of meeting minutes
- Copy of the "Railbelt coal alternative's report" (Ebasco)
- Copy of "Alaska Economic Projections" ISER

Some unresolved issues remain, including the load forecasts which are expected to be in the same range as the DSR forecasts.

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Memo of Meeting
December 14 and 15, 1981
Battelle PNL
Richland, Washington

December 17, 1981

Subject: Susitna Generation Planning and Railbelt Alternatives Studies

Purpose:

The purpose of the meeting was to review the study progress to date and identify and reconcile, if possible, differences.

Attendance:

Jay Jacobson, Battelle; Mary Ann Hosko and Phil Hoover, Acres

Agenda

1. Discuss status of progress of the individual studies, including work remaining.

2. Review and compare preliminary input/output of the Railbelt Generation Planning models, OGP (Acres) and EPRI Over/Under-AREEP Version (Battelle).

3. Discuss and resolve specific issues and differences between studies identified.

4. Unresolved issues

Meeting Notes

1. Phil Hoover reviewed the Acres' scope of work for the 6.37/.38 efforts and left a copy of the work scope. This scope provides for a breakout of the effort into eight subtasks:

   - Update Load Models (input)
   - Update Generation Model (input)
   - Alternatives Data
   - Generation Plan without Susitna
   - Generation Plan with Susitna
   - Financial Analysis
   - Sensitivity Analysis
   - Documentation

Jay Jacobson reviewed Battelle's effort which consists of essentially five tasks:

(a) Fuel cost estimating: (Lead - Tom Sechrest) This task is essentially complete. One area which is being reviewed is the availability of North Slope Gas in Fairbanks given recent developments in the gas pipeline. | ?

(b) Demand Forecasting: (Lead - Mike Scott) The forecast provided 12/9 has been invalidated due to an internal error in program data. New forecasts were being developed during the meeting. Anchorage and Fairbanks are assumed to have a 97 percent coincident peak.

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It appears that the medium load forecast, when completed, will be fairly close to the forecast used in previous DSR Acres' studies. All three forecasts will probably be available during the December 16-18 time period. The forecasting team is confident that the errors are ironed out of the forecast.

(c) Evaluation of Generation and Conservation Alternative: (Lead - Jeff King) This task is also nearly complete. From the initial exhaustive list of alternatives, there remains 17; eight or nine are hydro and the rest are coal and natural gas. The plans to be developed in Battalle Plans 1A and 1B will use coal-fired steam, combined cycle and gas turbine plants, located in both Anchorage and Fairbanks.

(d) System Integration: (Lead - Jay Jacobson) The primary tool to be used in this task is the EPRI Over/Under Model, AREEP Version. Using this model, Battelle will develop plans with scheduled plant additions and cost. Also to be done is a sensitivity analysis consisting of:

- Higher and lower fuel costs. The base case is set with world markets forcing real escalation of 2 percent on oil prices. Sensitivity will be done on price forecasts with world oil escalating at 1 and 3 percent.

- Capital costs will be varied on a ± 20% basis. Variance will be limited to one alternative at a time. All capital costs will be recovered in the generation planning study.

- Effect on demand of SB25 "capital cost grant" interpretation. For example, if consumer did not have to repay the costs of Susitna in their rates, what effect would the low cost energy have on demand.

(e) Implementation Strategy - This will be defined for each Generation Plan identified. This task will address the possibilities for financing, strategy and institutional arrangements needed for plan implementation, including cautionary notes on assumptions.

The actual completion date for the draft report in January 30. This will include plans, cost of plans, environmental impacts, other precautions. No recommendations are anticipated.

2. Mary Ann Hosko reviewed in detailed printout of a preliminary OGP output. The input data was discussed in detail. In general, there is a high degree of consistency between Acres and Battelle's basic data.

The load model used by OGP will be annually matched to the Battelle forecast; however, the monthly/daily characteristics will remain based on the 1980 Woodward-Clyde studies. The load model is a significant difference between AREEP and OGP as the former operates on a yearly load duration curve while the latter varys by month and day. AREEP will use a constant shape of load duration curve throughout the 30-year period of analysis.

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Acres has adopted the most recent Battelle information on existing and committed units. We will include the Copper Valley/Glennallen resources and load in the study, as Battelle has been directed to do so. In the OGP model, heat rates are specified to units, thus the existing units have a much higher heat rate than the available new alternatives. AREEP allows only a single heat rate for each type unit. Therefore, the OGP model will have higher fuel costs associated with use of existing generation units.

It was noted that Battelle is assuming no interactive energy flows between Anchorage and Fairbanks can take place prior to 1984. In 1985-89, energy transfer is limited to the planned intertie, 260 GHW annually. In the post-1990 period, energy transfers are unlimited. Acres, in focusing in the post Susitna period (1993-2010) has full exchange potential but also includes costs to account for the ~~more~~ greater intertie capability.

Acres is currently using one cost level each for coal, gas and oil. Battelle is differentiating between coal in Anchorage (Beluga) and Fairbanks (Nenana), and old and new gas in CEA and AML&PD. It was decided that Acres would make the necessary changes in their Railbelt model to enact the cost difference. This change will probably have a small impact on results.

Battelle is reviewing cost projections of North Slope gas available to Fairbanks. This is consistent with the economic scenario assumption of the completion of the TAPS gasline. It is interesting that this gas decreases in real price through time, due to the back out price from the lower 48 sales.

Battelle is using two coal plants at the separate prices at Beluga and Nenana, as compared to the Acres' all Beluga development. Since the costs developed by Ebasco are nearly equal for the two sites, the prior decision that it would be much less expensive to upgrade the intertie and keep development at Beluga may be remiss. Acres will give consideration to the shifting of some of the Beluga units to the Nenanna fields. This could enact savings to the all-thermal plan, as it would have lower transmission costs (currently $500 million).

At this time, 200 MW units are the standard size being used by Battelle for coal and combined cycle units. Acres will adopt this size. The retirement policies on the units will be from published Battelle work paper 4.1.

The AREEP model calculates interest during construction on capital costs, given a constant annual cash flow during the construction period. The OGP model does not calculate IDC so it is input as part of the capital costs. Acres is using an "S" curve formula for this calculation. These differences should not be significant.

Start up time as defined on Battelle's information sheets is not consistent with the Acres' definition of immature unit time. The Battelle definition is time which would be added on to the construction period for unit commissioning. The Acres' definition is that time that the unit suffers a

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higher forced and planned outage rate, due to "bugs" in the plant which must be worked out. Acres will revert to using the previous immature time periods instead of the new Battelle start-up times. Battelle does not have the capability for expressing immature outage rates.

Battelle is using several factors in AREEP, not used in the Acres' model. These include a rate base for plants in service, and a cost for distibution and overhead. Battelle is using 8.13 mills/kWh for general administration and overhead. The rate base was supplied by the Alaska-PUC. A copy was given to Acres. It is depreciated by Battelle on a declining balance method at 10 percent per year.

The AREEP model develops a generation plan based on a desired long term mix goal and an upper limit on capacities specified by the operator. Thus, the mix is controlled somewhat by the operator. The program, when capacity is needed, reviews the existing system mix and compares it to the long term desired plan. Units are then selected to make the existing balance as close as possible with the plan. Currently, the all-thermal long term mix is approximately 40% Beluga coal units, 18% combined cycle, 8% gas turbines, 14% Fairabnks (Nenana) coal and 20% hydro.

Spinning reserve requirements are not addressed by the AREEP model. The OGP model operates plants as necessary on a hot spinning reserve mode. Thus, the fuel costs in the Acres model will be higher for the same amount of generation.

The output of the AREEP model are in three categories of price Jan. 1981, mills/kWh: total, electrical requirements, delivered energy, and conservation. The latter is calculated by Battelle's RED (Railbelt Electric Demand) model. The delivered category corresponds to the Acres' planning since conservation is taken into account by the forecasts provided by Battelle.

It was concluded from the close comparison of the two models that the outputs will not be directly comparable on an absolute number basis. The generation plans are expected to be similiar with the relative merits of each plan shown to be the same. The following are major differences in methodology/model capability:

(a) Dispatch: The daily unit dispatch modeling in the OGP model results in greater use of more expensive units than the AREEP model, which dispatches units on an annual basis. This will result in higher fuel costs in the OGP model.

(b) Heat Rates: The AREEP model uses only one heat rate per unit type. The Acres' model was specific rates for each existing unit. This fuel costs for operating existing units will be significantly higher in the Acres' model.

(c) Overhead and Sunk Costs: The Battelle AREEP model has included cost for distribution systems and utility overhead. These have not been included in the Acres' model since relative costs between plans is desired rather than an absolute customer cost. Thus, the production

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cost value from the OGP model is not equivalent to the AREEP consumer cost. The AREEP model also includes an annual cost for existing plant in service which is depreciated over time.

3. Other issues discussed:

(a) Hydro alternative: Battelle has cost and energy information from both Bechtel and Ebasco on the Chackachamna project. It was agreed that the primary Chackachamna. alternative would be Case B from the Bechtel Study. Battelle will check the Ebasco costs and project insensitivity analyses.

Other hydro alternatives to be used are Grant Lake (7 MW in 1988) Allison Creek (7MW in 1992) based on Acres-DSR costs escalated to January 1982 by 7 percent and energies.

(b) Socio-economic data which is the basis of ISER's forecast was provided to Acres in report form.

(c) The revised medium forecast, as well as the high and low forecast, will be available by December 18. The high and low will bracket the range of reasonable economic futures.

(d) No analysis of a resultant reserve margin which would be dependent on forecast uncertainty has been completed. At this time Battelle is doing their analysis on a 40 percent reserve goal. Acres is planning to a loss of load probability of one day in ten years.

(e) A copy of Acres' final report on Cook Inlet Tidal Power will be sent to Battelle.

(f) Acres will adjust its model to differentiate between fuel costs in the different load centers. This will be consistant with the AREEP model. Additionally, to be consistent with Battelle's findings, a limited number of coal plants will be sited in Nenana to balance demand and generating resources.

(g) The period of analysis for the study was discussed. Acres is making the assumption of a 40-year extension of the last year (2010) of modeling in order to make some measure of the long term relative benefits of the with and without Susitna plans. While Battelle has no specific objections to the methods, they will not be doing the same, unless directed.

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(h) Susitna development was discussed, and it was pointd out that the development could be formulated as follows:

					Energy
Watana	1	4	170 MW units =	680	3385 GWh
	2	2	170 MW units =	340	0
				1020 MW	GWh
Devil Canyon	1	3	150 MW units =	450	3264 GWh
	2	1	150 MW units =	150	0
				600 MW	6649 GWh

Addition of second stage at Watana delays $41 million expenditure.

4. Unresolved Issues:

(a) The escalation of O&M and capital costs proposed by Ebasco have not been accepted yet by Battelle. They have requested that Ebasco substantiate the figures. At this time the values are not being used.

(b) The Acres' concern with regard to coal prices was discussed including: the zero real escalation of Nenana coal, the relationship between the coal and oil prices, and the probability of the opening of the Beluga fields in light of low coal value. This issue will be pursued at a later date.

(c) An additional concern with regard to level of confidence of estimates was discussed. The Susitna estimate, made with detailed studies, takes into account the specific problems of the site. The alternative estimates, on the other hand, may have a lower confidence level and may actually be a center point forecast, subject to a cost increase. Battelle will discuss the level of confidence of the estimates with Ebasco.

(d) Transmission line costs for Susitna development have included a reliable assessment of transmission line update and capability. A similar assumption and associated costs must be made for the thermal alternative, to be added to the cost of the "without" Susitna case.

December 17th 1981

ALASKA POWER AUTHORITY
SUSITNA HDYROELECTRIC DEVELOPMENT

DEVIL CANYON DEVELOPMENT
PRELIMINARY CASH FLOW

Year	% Of Total Period	Cummulative
1992	5.8	5.8
1993	8.4	14.2
1994	8.4	22.3
1995	5.9	28.2
1996	18.3	46.5
1997	19.2	65.7
1998	18.0	83.7
1999	12.5	96.2
2000	3.8	100.

Total Capital Cost $1470.2 Million

0025

81	1.84
85	2.03
90	224
2000	277
2010	342
2020	373
2030	368
2040	407

Annual growth rate 2%

250

%

Mid 1981

1.36 Jan 1982

12½ ↓ 1985

1.

Rupkin Ave 4/3/1982 1.61

50% .0

3.4

2.6

2.5

1.23

1.11

2.6% for 5

2.5% for 10

1.23 for 10

1.17 for 20

1.16 for 10

1.14 for 10

1.2 for 10

1.1 thereafter

Rate Review

3.4

SCHEDULE

Earliest Commercial Availability	1989
Preconstruction Studies and Licensing (years)	4
Construction (years)	6
Startup (years)	1/2
Plant Life (years)	35

FUEL

Heating Value (Btu/lb)	8000 ("Railbelt Standard" Coal)

COST DATA

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Estimated Costs (January 1982)	Beluga	Nenana
Overnight Capital ($/kW)	2051	2107
Fixed O&M ($/kW/yr)	16.83	16.83
Variable O&M (mills/kWh)	0.6	0.6
Fuel ($/MMBtu)	1.09	1.47

1.192 1.21

Escalation Factors (%/Year, 1981-2010)

Capital	(see Table 1)
Fixed O&M	(see Table 2)
Variable O&M	(see Table 2)
Fuel (Beluga)	1.5
Fuel (Nenana)	0.2

6 7%
1.09:64 1.109E4.

DECEMBER 3, 1981

A G E N D A

SUSITNA HYDROELECTRIC PROJECT

FINANCING & MARKETING - TASK II

1. INTRODUCTION
2. REVIEW OF TASK PROGRESS
3. OUTLINE OF FINANCIAL APPROACH
4. MARKET INTERACTION WITH RAILBELT UTILITIES
5. STATE OF ALASKA APPROPRIATION
6. SCOPE OF FURTHER WORK
   - Financing
   - Marketing
   - Risk Analysis
7. OTHER ISSUES

December 1, 1981

Presentation in Anchorage, Alaska

Objective

To demonstate what the basic pre-conditions are for:-

(a) Viable financing plan under todays conditions.

Bond Holder Requirements

The basic bond holder requirements will be:-

1) Adequate debt service cover.
2) Absorption of all risks - particularly the risks arising from inflation - by third parties.

Capital Requirements Allowing for Inflation

Whatever the long term rate of inflation (taken at 7% in a study) bond holders must be expected to demand that the bond offering/sufficient to bring the project to an economically viable state (Watana alone) allowing for at least 9% inflation over the construction period. This defines the bond offering requirement as $4.8 bn in 1984/85 assuming $2.5 bn of State funding accumulating interest from 1985. A further $6.8 bn will be required around 1991 for completion of Devils Canyon.

They would probably also wish to see contingent financing to meet real capital cost overruns of upto 20% of the bond offering. This makes the first stage offering $5.76 bn. A reserve fund of $1 bn out of the State appropriation would take this up to $6.76 bn.

Risk Absorption

It is basic to ~~the~~ a viable financing plan that the APA does not seek to absorb the virtually unlimited risk of capital overruns arising from increases (over 7% p.a.) in the rate of inflation over the 8 years (1985-1994) to completion of Watana. It is assumed that the supply contracts required for the

..../2

bond offering of 1984/85 will contain escalation provisions lifting the price of Watana energy at least in line with the general rate of inflation so that any impact of such inflation on capital costs can be serviced out of the higher revenues.

This means that only increases in capital costs in excess of the general rate of inflation (real capital overruns) would be "uncovered".

Possible Outcomes

Exhibit 2 shows the project limits of viability for capital cost and entry prices. The critical number in the table is the 1994 entry price as negotiated pre 1984/85 in the take-or-pay contracts. It is the "rock bottom" number which might result if thermal energy prices increase by only 7% per annum or if the escalated contract price was limited to general inflation and this was 7%. On this basis the matrix points to the following conclusions:

1) The project could withstand (a) % capital overruns (construction costs 20% higher in real terms) and still be cash viable (showing a positive net cash flow after debt service by the year). Debt service cover in conventional sense would be inadequate upto this date. It would be possible, however, to meet all debt servicing out of the $1 bn reserve fund.

2) At the more probable entry price of 135 mills (based on 10% escalation from 1981) the financing viability level limit goes out to a 30% capital overrun in real terms.

..../3

atana Alone as Back Stop

In terms of contingency planning and satisfying bond holders consideration should be given to halting construction after the completion of Watana under certain circumstances.

The circumstances which might justify the consequent delay of Devils Canyon are:-

(a) General inflation inordinately increasing the borrowing requirement or exceeding what was negotiated in the "flow through" contracts;

(b) very large real capital cost overruns;

(c) less than forecast increase in demand making Watana plus ~~pass~~ Devils Canyon bigger than the system can absorb at a mill rate consistent with financial viability at sufficiently early stage.

Provisional analysis shows that Watana alone could provide a strong back stop in the event of such extreme adversity. In the 120 mills case the extreme financing limit on capital cost would be a capital overrun in real terms of %. This would still leave the project reaching cash flow break-even by the year with the $1 bn reserve fund adequate to meet all cash deficits prior to this stage.

..../4

ISSUES TO RESOLVED

1) Magnitude and date of State appropriation

If 120 mills is accepted the possible lower limit at which take-or-pay contracts can be negotiated in run up to 1984/85, $2.5 bn made available in total to the project in 1985 is the minimum consistent with the ability of the project to withstand a real capital overrun of % in the Watana back stop case. When the money is available, however, it is also very important. If the capital is appropriated as required to meet construction costs (no interest accumulation) the capital that would need to be appropriated would be $3.5 bn over the years upto 1989.

Appropriation of complete contribution also limits risk exposure (eg in first stage up to Watana completion) to increasing interest rates since this cost would be offset by interest earned as appropriation was drawn down.

2) The Issue of Inflation

The desirability of an aggresive rather than defensive posture as regards inflation stressing that it will force up the capital cost of all the energy options and stressing that Susitna uniquely offers Alaskans' the opportunity to obtain 2/3 or more of total electricity requirements in to perpetuity at a virtually fixed cost.

3) Understatement of the Susitna Case

The studies at present understate the case for Susitna by focusing on the Susitna versus coal as the least cost option. In my view the case for Susitna would stand even if it were assumed (and it can be no more than assumed) that coal represented the cheaper long term alternative. This is because the real issue is what option long term maximises benefits to the State of Alaska. This is almost certainly going ahead with Susitna and exporting coal since maximising all economically available sources is what maximises State real wealth.

SUSITNA PROJECT
COMPUTER RUNS - DEC 1/2 1981

There are 8 sets of cases. - and 3 copies of each set.
In each set there are 6 or 8 cases in the following order:-

Capital Cost:		Fund:
Base		none
"	+10%	"
"	+-20%	"
* "	+30%	"
Base		$1 billion.
"	+10%	"
^	+20%	"
* "	+30%	"

* This case not included for Watana and Devils Canyon at an entry price of 120 mills.

The eight sets are:-

	Entry Price	State Contribution.
WATANA & DEVILS CANYON		
JOB2941	120 mills.	$2.5 billion.
JOB 2945	"	$3.0 billion.
JOB 2958	135 mills	$2.5 billion
JOB 2952.	"	$3.0 billion
WATANA ALONE		
JOB 2965	120 mills	$2.5 billion
JOB 2970	"	$3.0 billion
JOB 2980	135 mills	$2.5 billion.
JOB 2975	"	$3.0 billion.

SUSITNA PROJECT
COMPUTER RUNS DEC 1/2 1981

The following assumptions are common to all cases:-

1. Interest Rate – 12%.
2. Inflation Rate – 7%.
3. Price Escalation Rate – 120 mills 7%
   135 mills 10%

4. No release of Fund.
5. Surplus cash generated during operations accumulates in the project and earns interest.
   (In previous runs it was returned to the State).

5. Commitment fees – eliminated to facilitate comparisons.
6. Depreciation – eliminated

All other assumptions as in previous runs.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

P5700.11

Comparison With Capital Cost $3672M Esc. From 1982 at 7% P.A. - State Contribution $3.0 Bn

Watana Alone		Mills/KWH						Mills/KWH					
Entry Price:		120 + 7% per annum						135 + 10% per annum					
Year:-		1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
Revenue $M		423	485	555	635	680	778	490	592	717	867	954	1154
$3672M BASE CAP COST	DS/C	1.7	2.1	2.6	3.3	3.8	4.8	2.0	2.6	3.6	4.9	5.7	7.7
	DS/C+ FUND	4.1	4.3	4.7	5.1	5.4	6.1	4.3	4.7	5.4	6.2	6.7	8.0
	CASH	114	180	405	500	600	844	183	310	624	849	1032	1493
+10%	DS/C	1.1	1.3	1.6	1.9	2.1	2.7	1.4	1.7	2.2	2.9	3.4	4.5
	DS/C+ FUND	3.1	3.2	3.4	3.6	3.8	4.2	3.3	3.5	3.9	4.4	4.7	5.6
	CASH	(3)	32	220	269	340	518	66	162	439	617	772	1167
+20%	DS/C	0.9	0.9	1.0	1.2	1.3	1.5	1.0	1.2	1.5	2.0	2.2	3.0
	DS/C+ FUND	2.5	2.5	2.5	2.6	2.7	2.9	2.6	2.7	3.0	3.3	3.6	4.1
	CASH	(120)	(115)	35	37	80	192	(52)	15	255	385	513	841
+30%	DS/C	0.7	0.7	0.8	0.8	0.9	0.9	0.8	0.9	1.1	1.3	1.5	2.0
	DS/C+ FUND	2.1	2.0	1.9	1.9	1.9	1.9	2.2	2.2	2.3	2.5	2.7	3.1
	CASH	(238)	(262)	(150)	(195)	(180)	(134)	(169)	(132)	70	154	253	515

Note Cash Deficits Shown ( )

EXHIBIT B

December 2, 1981

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

P5700.11

Comparison With Capital Cost $3672M Esc. From 1982 at 7% P.A. - State Contribution $2.5 Bn

Watana Alone		Mills/KWH						Mills/KWH					
Entry Price:		120 + 7% per annum						135 + 10% per annum					
Year:-		1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
Revenue $M		423	485	555	635	680	778	490	592	717	867	954	1154
$3672M BASE CAP COST	DS/C	1.0	1.2	1.4	1.7	1.8	2.3	1.2	1.5	2.0	2.6	3.0	4.0
	DS/C+ FUND	2.9	2.9	3.1	3.3	3.5	3.8	3.1	3.3	3.6	4.1	4.3	5.1
	CASH	(37)	(10)	167	202	266	425	32	120	386	551	698	1074
+10%	DS/C	0.8	0.8	0.9	1.1	1.1	1.3	0.9	1.1	1.4	1.8	2.0	2.6
	DS/C+ FUND	2.4	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.8	3.1	3.3	3.8
	CASH	(154)	(157)	(18)	(30)	6	99	(85)	(27)	202	319	438	748
+20%	DS/C	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.0	1.2	1.4	1.8
	DS/C+ FUND	2.0	1.9	1.8	1.8	1.8	1.7	2.1	2.1	2.2	2.3	2.4	2.9
	CASH	(272)	(305)	(203)	(262)	(254)	(227)	(203)	(174)	17	87	179	422
+30%	DS/C	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.9	1.0	1.2
	DS/C+ FUND	1.7	1.6	1.5	1.4	1.4	1.3	1.8	1.7	1.8	1.8	1.9	2.0
	CASH	(389)	(452)	(388)	(493)	(514)	(552)	(320)	(322)	(168)	(145)	(81)	96

Note Cash Deficits Shown ( )

EXHIBIT B

December 2, 1981

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

Comparison With Capital Cost $5299M Esc. From 1982 at 7% P.A. - State Contribution $3.0 Bn

Watana and Devil Canyon — Mills/KWH

Entry Price:		120 + 7% per annum						135 + 10% per annum					
Year:-		1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
Revenue $M		423	485	555	1076	1151	1318	490	592	717	1469	1616	1956
$5299M BASE CAP COST	DS/C	1.7	1.9	2.3	4.4	1.5	1.8	2.0	2.4	3.0	6.1	2.6	3.5
	DS/C+ FUND	4.1	4.2	4.5	5.7	2.4	2.7	4.3	4.6	5.0	6.8	3.5	4.3
	CASH	-	-	-	-	253	472	-	-	-	445	892	1455
+10%	DS/C	1.1	1.3	1.5	2.9	1.0	1.2	1.4	1.6	2.0	4.1	1.7	2.3
	DS/C+ FUND	3.1	3.2	3.4	4.3	1.7	1.8	3.3	3.5	3.8	5.1	2.5	2.9
	CASH	-	-	-	-	(89)	43	-	-	-	125	551	1026
+20%	DS/C	0.9	0.9	1.1	2.2	0.8	0.8	1.0	1.2	1.5	3.1	1.3	1.6
	DS/C+ FUND	2.5	2.5	2.7	3.4	1.4	1.4	2.6	2.8	3.0	4.1	1.9	2.2
	CASH	(55)	(12)	-	-	(432)	(386)	-	-	-	-	208	596
+30%	DS/C							0.8	0.9	1.2	2.4	1.0	1.2
	DS/C+ FUND							2.2	2.3	2.4	3.3	1.5	1.7
	CASH							(99)	(23)	-	-	(134)	167

Note Cash Deficits Shown ( )

EXHIBIT C

December 2, 1981

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

Comparison With Capital Cost $5299M Esc. From 1982 at 7% P.A. - State Contribution $2.5 Bn

Watana and Devil Canyon		Mills/KWH						Mills/KWH					
Entry Price:		120 + 7% per annum						135 + 10% per annum					
Year:-		1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
Revenue $M		423	485	555	1076	1151	1318	490	592	717	1469	1616	1956
$5299M BASE CAP COST	DS/C	1.0	1.2	1.4	2.7	1.0	1.2	1.2	1.5	1.8	3.7	1.7	2.3
	DS/C+ FUND	2.9	3.0	3.2	4.0	1.8	1.9	3.1	3.2	3.5	4.8	2.5	2.9
	CASH	-	-	-	-	(84)	50	-	-	-	146	556	1032
+10%	DS/C	0.8	0.9	1.0	2.0	0.8	0.8	0.9	1.1	1.4	2.8	1.3	1.6
	DS/C+ FUND	2.4	2.4	2.5	3.1	1.4	1.4	2.5	2.6	2.8	3.9	1.9	2.2
	CASH	(88)	(53)	-	-	(426)	(380)	(17)	-	-	-	214	603
+20%	DS/C	0.7	0.7	0.8	1.4	0.6	0.7	0.8	0.9	1.1	2.2	1.0	1.2
	DS/C+ FUND	2.0	1.9	1.9	2.4	1.1	1.1	2.1	2.1	2.3	3.1	1.5	1.7
	CASH	(203)	(197)	(152)	-	(767)	(807)	(132)	(65)	-	-	(128)	174
+30%	DS/C							0.6	0.7	0.8	1.7	0.8	0.9
	DS/C+ FUND							1.8	1.8	1.8	2.5	1.3	1.3
	CASH							(248)	(209)	(109)	-	(469)	(254)

Note Cash Deficits Shown ( )

EXHIBIT C

December 2, 1981

November 27, 1981.

PERSONAL & CONFIDENTIAL

Mr. T. McGuire,
Alaska Power Authority,
334 West 5th Avenue,
Suite 31,
ANCHORAGE, Alaska 99501.

Dear Terry:

Susitna Hydroelectric Project
Financing Plan

In the weeks since the October 13th meeting in Buffalo, we have proceeded with the development of a viable financing plan which would fit the financial parameters and constraints which we have agreed and which are set out on Attachment A. The financing approach to Susitna is sensitive to a number of variables and we are very well aware of the need to pursue a basis for definitive study which meets the requirements of the State, of the Authority, and of the senior debt investors. We do not want to embark on an approach which has a real risk of challenge and we seek one which will meet a wide variation of eventualities.

As you will recall, Professor A. J. Merrett worked closely with us during the period earlier this year when we investigated financing arrangements based on State funding of the Watana Dam as a principal element of the overall project. We investigated financing schemes where the State enjoyed either a royalty income return or, alternatively, a residual equity position after senior debt had been redeemed. From his prior knowledge of the Susitna Hydroelectric Development, Tony Merrett is in a position to provide an important contribution to current considerations in the light of the most likely level of State of Alaska legislature appropriation findings.

Cont'd ...

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Telephone 716-853-7525

As reported to you, we discussed with John Raben on November 23rd the best manner of approaching the bond raising program for Susitna in the present uncertainties of the bond market and, in particular, the very adverse experience the market has seen with major capital projects (like Washington Public Power Supply) massively and repeatedly overrunning their forecast bond raising requirements. Our present thinking is that we should, under these conditions, develop a robust financing plan which would cope with these problems by a three-pronged approach. The first, would be that of reserve fund financing with 40% of the State contribution (e.g. $1 bn out of $2.5 bn set aside in an interest accumulating fund) dedicated to protecting bond holders in substantial measure from their perception of the engineering risks, inflationary overruns, etc., with the fund released to pay off medium-term indebtedness (and therefore, with some delay, to be used for construction) as soon as the project has established the track record of earnings cover which bond holders require. John Raben's view was that this will be attractive in increasing the "leverage" which could be exerted by State funds compared with using these totally for construction expenditures.

The attached brief statement and chart will, I hope, provide a reasonably full explanation of this approach and the other measures that may be required to produce a financing package acceptable to bond holders.

It would be very helpful, however, if we could have an early discussion with you and Eric to determine to what extent these approaches are politically acceptable, and the extent to which you would, if at all, wish to see them detailed in the "Financing" and "Financing Risk" sections of our report. With the possibility of underwriters taking first soundings of the market in 1985 it is important that, whatever is published at this stage, we do propose concepts, contractual arrangements, and possible State guarantees which would ensure that the project could go ahead almost irrespective of the bond market conditions at that time.

We have suggested a visit to Anchorage, with Tony Merrett, for discussions with you on December 3rd and 4th. John Lawrence would also plan to be present as he has other matters to deal with in Alaska at that time. You offered to confirm these dates once you have seen the situation as set out in this letter and attachments. We look forward to hearing from you on Monday, November 30th.

With kind regards. Hope you had a happy Thanksgiving '81.

Yours sincerely,

J. Gavin Warnock,
Vice President
Corporate Development

ACRES AMERICAN INCORPORATED

P.S. With the attachments I have included an outline of the revised scope of work for Task 11 for your consideration and approval.

JGW/JC
Att.

November 26, 1981

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

THE SUSITNA FINANCING OPTION

The Basic Financing Problem

The conclusive economic justification for Susitna is inflation and the guarantee which Susitna offers of a virtually perpetual supply of fixed cost energy. At the same time it is this very inflation which also creates for Susitna (as for every other major high capital cost investment) related hazards of financing difficulty and loss of public creditability because the realities created by inflation may not be addressed thoroughly and consistently at the outset.

The seriousness of the problem of inflation in financing is readily overlooked in the context of construction cost estimates based on constant prices and excluding IDC. The impact of inflation even at the 7% assumed in our estimates is shown on the attached Exhibit in transforming our provisional capital cost estimate of $5.3 bn in current prices into $13.9 bn in then current money. Taking into account a $2.5 bn State contribution in 1985 this still leaves a total borrowing requirement $8 bn on the basis of 7% inflation or $11.6 bn if a 9% inflation rate was to apply (In the light of past experiences it must be assumed that bond holders will wish to allow for rates of inflation higher than the "central" estimate). This leads to three basic conclusions:-

(1) The necessity of accustoming the public and the legislature to these financing realities and only giving qualified reference to the constant price capital estimates and so avoiding the adverse publicity and loss of creditability which ensues when the capital cost estimates appear to rise massively over time.

(2) Continually emphasising the basic point that it is precisely this inflation in capital cost (as it arises from the general price level) which justifies Susitna in terms of its being a unique perpetual source of constant price energy protecting Alaskans' from future inflation.

(3) Developing, as early as is practical a financing plan which is realistic, robust and flexible so that the project is not held up by unforeseen difficulties and changing circumstances.

Probable Financing Scenario

In assessing the alternative financing options we need to keep in mind the schedule and possible magnitude of the bond offerings required. On present forecasts we would need to put forward fairly definitive prosposals to underwriters in 1984 with a view to a 1985/86 bond offering of minimum magnitude $3.5 bn for Watana and the prospect of a subsequent bond offering of minimum $4.7 bn to complete Devil Canyon (assuming that $2.5 bn has been appropriated by the State for Susitna in 1985). This is on the assumption that inflation averages only 7%. At 9% the bond offerings would have to be for $4.8 bn and $6.8 bn respectively (again assuming $2.5 bn State contribution in 1985).

These bond offerings are substantial and with the probability of continuing (if not increasing inflation), and numerous examples of major capital projects overrunning their forecast borrowing requirements, the bond holders will expect positive demonstration that we have a financing plan which protects them from this and every other possible contingency. In the absence of specific and independent guarantees it will not be enough to demonstrate the fact that, long-term, Susitna has immense economic strength. Their concern will be absolute assurance that, in the worse conceivable eventualities of capital overrun, or revenue shortfall, debt service is not at risk in any year.

We also have to allow for the probability that without independent guarantees it is unlikely that any committment to the $11.6 bn total borrowing requirement (on 9% inflation) could be obtained in 1985/86 and that bond holders may want demonstration that, if for any reason the second stage of borrowing is dealyed or does not occur, the first stage borrowing is sufficient to establish Watana alone as an economically viable project.

With sufficient pre-planning we believe that all these requirements could be met and a successful bond offering reasonably assured.

The Two Stage Reserve Funding Plan

In outline the plan we suggest for consideration at this time provides for the risks of Susitna to be borne appropriately in part by the APA, in part by the consuming utilities with a possible residual part borne by the State and most importantly allocates $1 bn of an assumed State contribution of $2.5 bn to a Reserve Fund dedicated to shielding bond holders from any residual risks. As soon as full viability of the project is established the Reserve Fund would be used to repay medium-term indebtedness and thus is effectively used for the construction of Susitna.

The essential elementing of this structure are first the establishment of appropriate supply contracts with the consuming utilities which would provide for their taking the Watana output at a price equivalent 45 mills (in 1981 prices) escalated by the rate of inflation of thermal fuels. Our provisional estimates indicated that the utilities could contract at this price and inaggregrate obtain substantial savings compared with the cost of alternative fuels. These contracts would also contain minimum rates of escalation based upon

the general rate of inflation. Our provisional estimates are that, if the construction estimates are held (that is there is no increase in the cost at constant prices), Watana would constitute a viable project in its own right and therefore provide the basis on which bond holders could prudently move to the second stage bond financing and the completion of Devil Canyon.

The second key element, the $1 bn reserve fund, can be seen, at this stage, as protecting bond holders:-

(a) Against any hazards which, in their estimation, might conceivably lead to the project not being completed to the Watana stage;

(b) Against real construction (constant money) overruns which result in the project having inadequate debt service cover given the additional borrowing that would be required and the absence of any escalation provisions obliging the utilities to meet this additional element of cost;

(c) Against any "flexibility" in the sales contracts or credit standing of the contracting parties, which resulted in the bond holders not being fully protected by "flow through" provisions, against the effect of general inflation on the project capital cost and borrowing requirement.

In all these circumstances, and covering a very wide range of eventualities, the Reserve Fund would exist to assure unfailing payment of debt service. In effect the Reserve Fund proposal is just an extension (on a larger scale) of the Bond Reserve requirements in most bond offerings requiring that a reserve be created

to ensure debt service against year to year fluctuation in earnings. Using a significant part (40%) of the State contribution for this purpose, however, we can get maximum "leverage" (maximum secured borrowing) from it.

If the project is, at the end of the first stage, within its construction estimates, the whole of the $1 bn reserve fund would be available for again shielding bond holders at the second stage from all the residual risks not covered by the "flow through" provisions of the power sales contracts relating to the additional output from Devil Canyon. When this stage is successfully established the Reserve Fund would be released for repayment of medium-term debt and so effectively used to finance construction. (The Reserve Fund approach would not in any way increase the cost of the project since the interest on the fund would offset interest on monies borrowed.)

The logic of this scheme can best be seen by contrasting it with that in which the <u>whole</u> of the State contribution is simply dedicated to first stage construction. In this case the project would be without financial reserves and bond holders would almost certainly demand that the sales contracts with the utilities are completely open ended such that the utilities would take an unconditional liability to meet the whole of the debt service obligations on whatever the final capital cost of the project may be.

Such unlimited liability contracts would be difficult to negotiate and might prove a major obstacle to progress towards a timely bond offering. They might also be regarded as unfair in that the utilities are (as in the Washington Power case) being asked to assume unlimited liability for construction (constant cost) overruns in <u>addition</u> to the risk of overruns due to inflation. It is reasonable for them to assume the latter type of risk since such risks are inherent in any alternative option. The construction cost risks, however, are properly the responsibility of the entity sponsoring the project.

The reserve fund would enable the sales contracts to proceed on the more equitable basis described and give some degree of further flexibility on the precise terms of the critically important "flow through" provisions of the sales contracts.

The scheme as proposed would then distribute the construction, inflation and eocnomic risks of the project equitably between the parties-in-interest. There may, however, be some residual risks as, for example, the ongoing risk of natural hazards.

Our preliminary inquiries have indicated that such risks may not be insurable in the commercial markets at any acceptable cost. It may therefore be necessary for the State to assume this ultimate responsibility so that, in total, all potential bond holders risks are absorbed.

Conclusions

The financing proposal outlined above appears to provide a flexible and realistic manner in which all bond holder risks can equitably be absorbed. If accepted in principle by the APA it would also provide a realistic and acceptable basis on which to negotiate with the utilities in a manner which would result in fairly definitive contracts being arrived at by 1984/85, the date at which a reasonably complete financing proposal would need to be presented to the underwriters.

It is also readily adoptable to any subsequent developments which may alter the terms in which the power would be contracted to consuming utilities.

Attachment A
(To letter of November 26, 1981)

SUSITNA HDYROELECTRIC PROJECT
TASK 11 FINANCIAL ANALYSIS

Financial Parameters

At a meeting in Acres American, Buffalo offices on October 13th agreement was reached with T. McGuire APA and J. Raben, First Boston Corporation on financial parameters which should be used for analysis of the Susitna Hydroelectric Project. These are listed below together with "average" parameters used in the early stage of "test" financial analysis.

		Low	Median	High	"Test" Values
(a)	% Funding of the total project cost from State of Alaska	30	45	60	$2 bn $2.5 bn $3.0 bn
(b)	% ROI on State Funds (employed for test of financial viability only)	5	5	5	5
(c)	% Interest rate on senior debt funds	10	-	14	12 and 14
(d)	Senior debt maturity (with interest and principal payments levelised over period commencing one year following the year of full plant operation) - years	30	30	30	35
(e)	Inflation rate %	7	7	7	7 and 9
(f)	Debt service cover applied to the annual requirements for levelised senior debt service	1.25 rising to 1.5			1.25 rising to 1.5

Attachment A
(To letter of November 26, 1981)

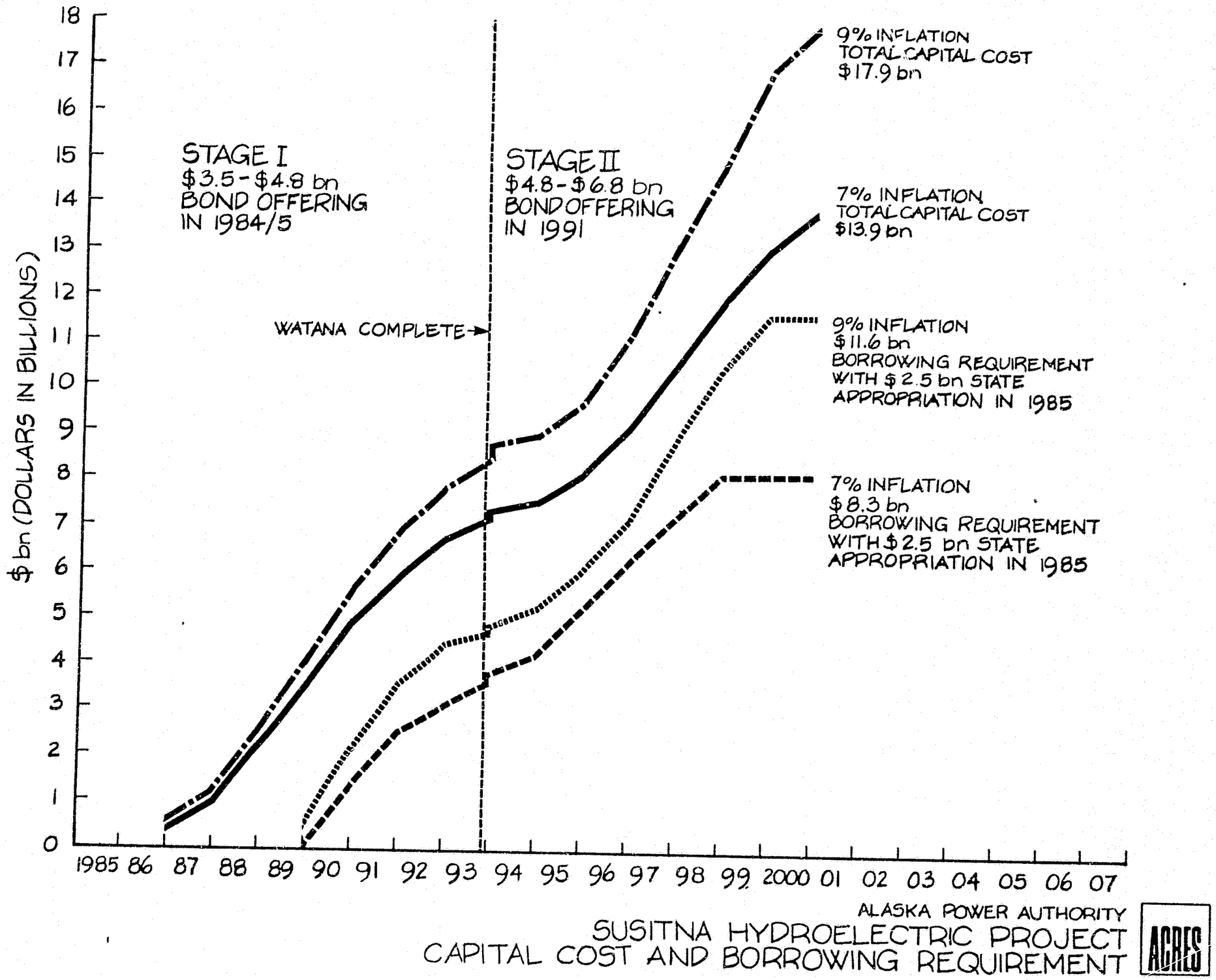
SUSITNA HDYROELECTRIC PROJECT
TASK 11 FINANCIAL ANALYSIS

Financial Parameters

At a meeting in Acres American, Buffalo offices on October 13th agreement was reached with T. McGuire APA and J. Raben, First Boston Corporation on financial parameters which should be used for analysis of the Susitna Hydroelectric Project. These are listed below together with "average" parameters used in the early stage of "test" financial analysis.

		Low	Median	High	"Test" Values
(a)	% Funding of the total project cost from State of Alaska	30	45	60	$2 bn $2.5 bn $3.0 bn
(b)	% ROI on State Funds (employed for test of financial viability only)	5	5	5	5
(c)	% Interest rate on senior debt funds	10	-	14	12 and 14
(d)	Senior debt maturity (with interest and principal payments levelised over period commencing one year following the year of full plant operation) - years	30	30	30	35
(e)	Inflation rate %	7	7	7	7 and 9
(f)	Debt service cover applied to the annual requirements for levelised senior debt service	1.25 rising to 1.5			1.25 rising to 1.5

		Low	Median	High	"Test" Values
(g)	% Rate, based on original capital cost with allowance for inflation, at which "Replacement and Renewals" are provided for	3/4	3/4	3/4	3/4
(h)	Inflation rate applied to construction costs during the period of construction	10	10	10	7 and 9
(i)	Inflation rate applied operating costs during the period of operation	8	8	8	7 and 9
(j)	"Reserve and Contingency" fund as a % of annual operating costs set aside and replenished year by year	not decided			400%
(k)	Committment and placement fees as bond financing costs	not decided			1/2% of bond value



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT
CAPITAL COST AND BORROWING REQUIREMENT

ACRES

ARLIS

OFFICE MEMORANDUM

J. D. Lawrence

Date: November 25, 1981

File: P5700.07.11

FROM: J. G. Warnock

cc:

SUBJECT: SUSITNA

Further to todays telecon I hope that these rough diagrams will assist in understanding the financial plan we are suggesting.

JGW:dn

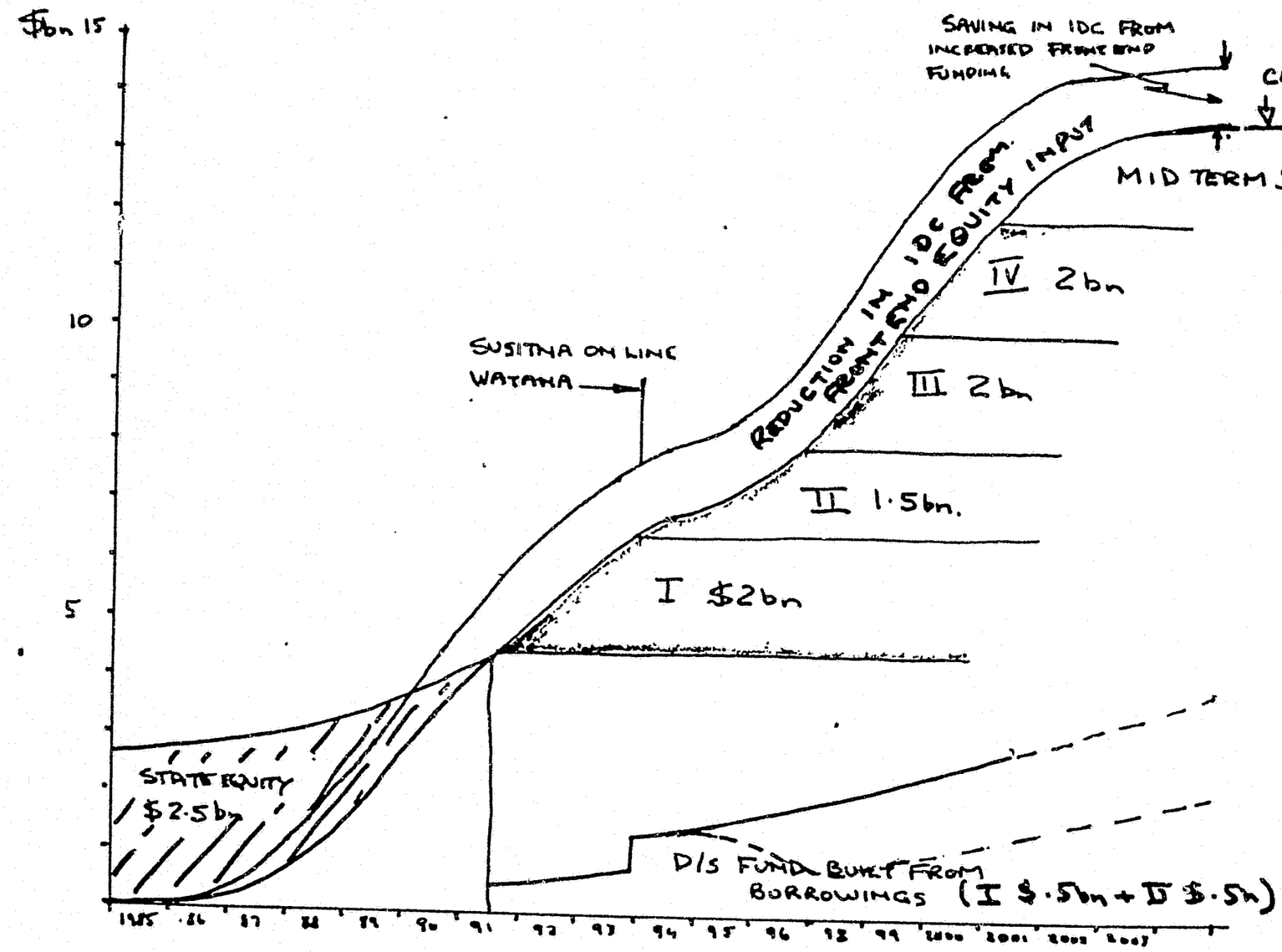
Dale Nolan
for: J. G. Warnock

ACRES

Calculations

SUBJECT:

JOB NUMBER
FILE NUMBER
SHEET OF
BY DATE
APP DATE



$ Bn
$2.5 STATE EQUITY
$8.5 SENIOR DEBT
$1.5 MID TERM
$2.0 RESIDUAL IN D/S A/c

$10.5 bn. DEBT+EQ
2.5 bn EQUITY

$8 bn DEBT LESS RETIDUAL IN D/S & L GUAR FUND

CASE WITH ALL STATE EQUITY APPLIED TO CONSTRUCTION EXPENDITURES

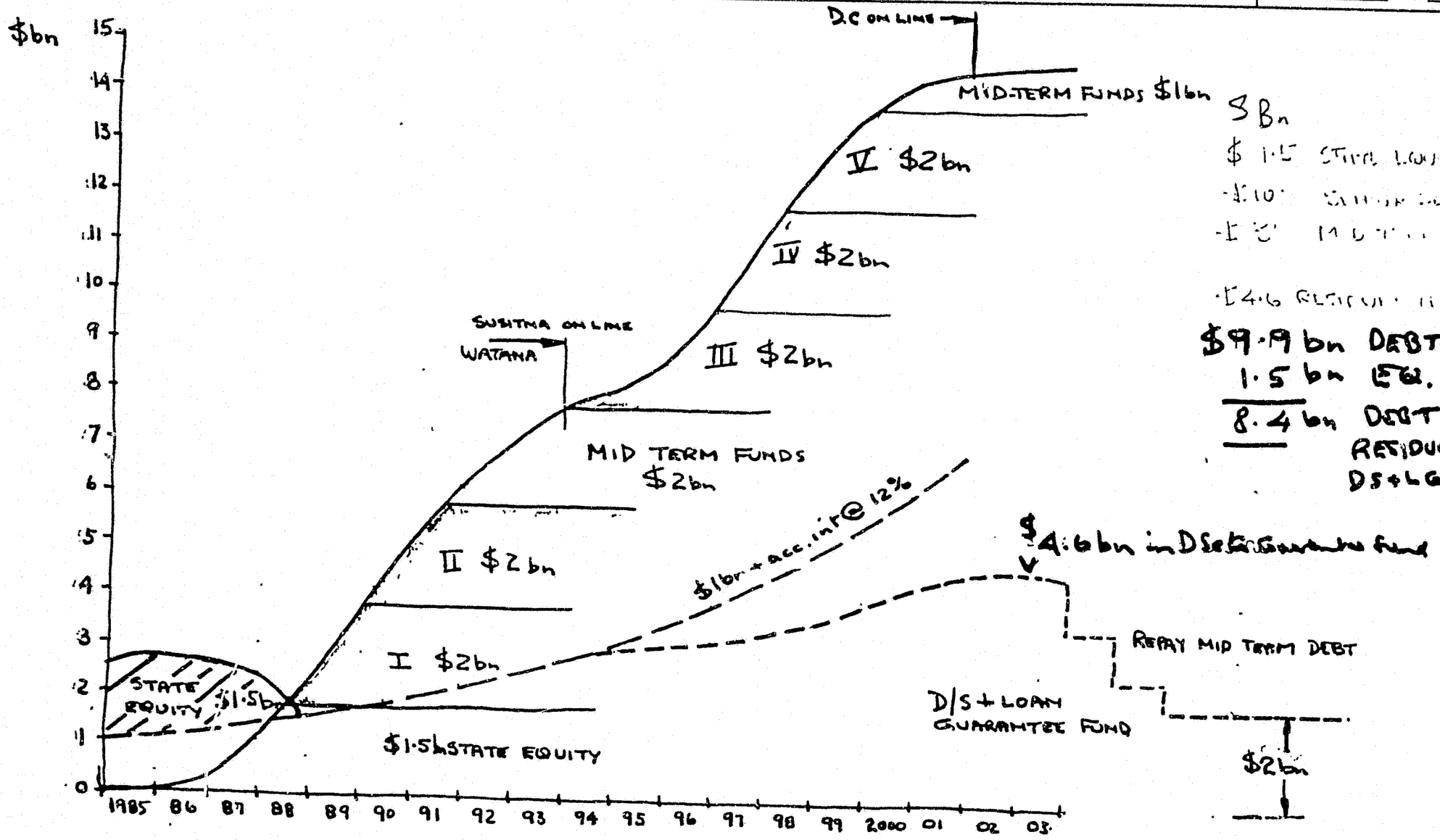
50.04.01 Form 148A

ACRES

Calculations

SUBJECT: ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT - FUNDING PATTERN.

JOB NUMBER P5700 11
FILE NUMBER
SHEET OF
BY MOU 23/81 DATE
APP DATE



$ Bn
$ 1.5 STATE EQUITY
$ 1.0 [illegible]
$ 5.4 [illegible]

$4.6 RETAINED IN D/S A/C
$9.9bn DEBT+EQ
1.5bn EQ.
8.4bn DEBT LESS RETENTION IN D/S+L GUAR FUND

CASE WITH STATE FUNDS PARTIALLY APPLIED TO DEBT SERVICE & LOAN GUARANTEE "REFERRED PLAN"

60.04.01 Form 148A

Record of Telephone Call
Terry McGuire/J. G. Warnock November 17, 1981 6:00 p.m.

JGW advised that the delay in submitting a scope of work, level of effort, schedule etc. for Task 11 was due to a desire to provide firm dates, which was proving difficult in the face of the several decisions which now had to be made concerning, dam height, energy level etc.

In the meantime Task 11 had maintained some momentum and we were at a stage where we would benefit greatly from an exchange of views with John Raben. A meeting had been arranged for Monday 23rd.

Outlined the "pattern" of finace we were considering with the loan guarantee fund to meet early year deficits. Terry McGuire asked for an informal letter outlining our ideas and requested that we open a "dialogue" through "informal" correspondence to allow over the next few weeks a resolution of some of the issues in which APA had a key role to play.

McGuire advised that they were working torwards a possible meeting with Rohan and Battelle MW to discuss some of the concerns arising over economic and financial evaluation. He indicated that Dr. Rowan's viewpoint was not entirely in phase with their own.

We discussed Robert Mohn's letter requesting sensitivity runs on "optimum scheduling". Advised that we were planning to give an opinion on the financiability of project delivering first power in 1993 and could, if desired look at various corresponding schedule dates for Devil Canyon. McGuire felt that information of this nature would be helpful.

McGuire encouraged an open discussion with John Raben, First Boston Corporation and looked forward to hearing of the outcome.

JGW:dn

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ACRES BUF

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NOV 10/81 P5700.07.11

Out
Nov 10/81

ATTN: JOHN LAWRENCE

RE: SUSITNA HYDROELECTRIC PROJECT
TASK 11 FINANCING ANALYSIS

(A) FOLLOWING OUR MEETINGS WITH TERRY MCGUIRE AND JOHN RAGEN IN OCTOBER 13TH THE FOLLOWING FINANCIAL PARAMETERS WERE ESTABLISHED FOR FURTHER ANALYSIS:-

	LOW	MEDIUM	HIGH
(A) O/O FUNDING OF TOTAL PROJECT COST FROM STATE OF ALASKA	30	45	60
(B) O/O ROI ON STATE FUNDS (EMPLOYED FOR TEST OF FINANCIAL VIABILITY ONLY)	5	5	5
(C) O/O INTEREST RATE ON SENIOR DEBT			

INTEREST AND PRINCIPAL PAYMENTS
LEVELISED OVER PERIOD
COMMENCING ONE YEAR FOLLOWING
THE YEAR OF FULL PLANT
OPERATION — 30 YEARS

(E) INTEREST ON DEBT ADVANCED
FUNDS DURING CONTRIBUTION TO
BE CAPITALISED TO 1 YEAR AFTER
FULL OPERATION OF EACH PROJECT
SEGMENT

(F) DEBT SERVICE COVER TO BE MAINTAINED
AT 1.25 TIMES INITIALLY RISING TO
1.5 TIMES THE ANNUAL REQUIREMENT FOR
LEVELISED SENIOR DEBT SERVICE

(G) FUND FOR REPLACEMENT AND REVENUES
ACCUMULATED AT A RATE OF 3/4 O/O
OF ORIGINAL CAPITAL COST WITH
ALLOWANCE FOR INFLATION

(H) INFLATION RATE APPLIED TO
CONTRIBUTION COSTS DURING
CONSTRUCTION 10 O/O PER ADDUM

(I) INFLATION RATE APPLIED TO OPERATING
COSTS 8 O/O

NOTE ITEMS (A) - (G) AS DISCUSSED, FOLLOWING ITEMS DETERMINED SUBSEQUENTLY AS:-

(J) FUND FOR RESERVES AND CONTINGENCIES ACCUMULATED AT A RATE OF 400 0/0 OF OPERATING COST AND EMPLOYED YEAR BY YEAR TO PROVIDE FUND (G)

(K) COMMITTMENT AND PLACEMENT FEES RECOGNISED AS FINANCING COSTS AT LEVELS YET TO BE DECIDED

(L) WORKING CAPITAL TREATED AS CAPITAL OUTLAY FUNDED WITH PROJECT

(M) REVENUE ASSESS ON ONLY FIRM ENERGY OUTPUT

(B) APA LETTER OF OCTOBER 29TH PLACES NEW EMPHASIS ON INPUTS FROM OGP-5 ANALYSIS AND FROM TASK 11 - FEZIBL. IT APPEARS TO ASK US TWO SEPARATE SETS OF QUESTIONS WHICH THEY MAY NOT HAVE CLEARLY IN THEIR OWN MINDS. (1) THE FIRST SET OF QUESTIONS IS ABOUT COST BENEFIT ANALYSIS INTERPRETATION OF OGP-5. THEY MAY HAVE IN MIND THAT OGP-5 TAKES NO ACCOUNT OF LONG RUN SECURITY, CONSERVATION ISSUES ETC., AND THAT THE "STATE IS LOOKING FOR THE LOWEST COST LONG TERM ALTERNATIVE" IN THIS SENSE. THE STATE CONTRIBUTION CAN THEN BE SEEN AS PUTTING A VALUE ON THESE INTANGIBLE BENEFITS AND THE APA WANTS US TO TEST OGP-5 INTERPRETATING ITS RESULTS AS "THE SENSIVITIVITY OF OPTIMUM SCHEDULING" WHEN THE COST OFFSET REPRESENTED BY THIS

EVALUATION OF THE INTANGIBLE BENEFITS OF SUSITNA I.E. 45 ... EQUITY ARE TAKEN INTO ACCOUNT AS A REDUCTION IN SUSITNA CAPITAL COST. IT SHOULD BE NOTED THAT THIS CONTRIBUTION DOES ''NOT'' ATTRACT INTEREST OR CHARGE. THE 5 0/0 RETURN ON INVESTMENT IS A TEST TO BE APPLIED WHEN FINANCIAL OUTCOME OF PROJECT HAS BEEN DETERMINED. (2) THE OTHER ''OPTIMUM SCHEDULING'' QUESTIONS THEY MAY HAVE IN MIND RELATE TO THE OPTIMAL FINANCIAL SCHEDULING

THAT IS WHEN AND TO WHAT EXTENT WOULD IT BE FEASIBLE TO FINANCE THE REMAINING PROJECT REQUIREMENTS BY DEBT. GIVEN THE ASSUMPTIONS THEY STATE. WE ARE IN A POSITION TO GO AHEAD WITH ANSWERING THIS LAST QUESTION FROM OUTPUT OF FEZIBL UNDER TASK 11.

IF YOU ARE HAPPY ABOUT THIS INTERPRETATION OF THE LETTER WE WILL GO AHEAD WITH THE FINANCIAL SCHEDULING PART IT AS PART OF TASK 11. IF ON THE OTHER HAND YOU HAVE ANY DOUBTS WHAT IT IS THEY WANT PERHAPS YOU SHOULD CHECK WITH R. MOHN AND THEN LET US KNOW WHAT IT IS YOU WOULD LIKE DONE.

J.G. WARNOCK

TORONTO

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ACRES BUF

ACRES TOR

... 8 0/0

P5700.07 11

Telex

Buffalo Office
91-6423

Attn: John Lawrence

Re: Susitna Hydroelectric Project
Task 11 Financing Analysis

(A) Following our meetings with Terry McGuire and John Raben on October 13th the following financial parameters were established for further analysis:-

		Low	Medium	High
(a)	% Funding of total project cost from State of Alaska	30	45	60
(b)	% ROI on State Funds (employed for test of Financial viability only)	5	5	5
(c)	% interest rate on senior debt	10		14
(d)	Senior debt maturity with interest and principal payments levelised over period commencing one year following the year of full plant operation		30 years	
(e)	Interest on debt advanced funds during contribution to be capitalised to 1 year after full operation of each project segment			
(f)	Debt service cover to be maintained at 1.25 times initially rising to 1.5 times the annual requirement for levelised senior debt service			
(g)	Fund for replacement and revenues accumulated at a rate of 3/4% of original capital cost with allowance for inflation			

..../2

(h) Inflation rate applied to contribution costs during construction 10% per annum

(i) Inflation rate applied to operating costs 8%

Note items (a) - (g) as discussed, following items determined subsequently as:-

(j) Fund for reserves and contingencies accumulated at a rate of 400% of operating cost and employed year by year to provide fund (g)

(k) Committment and placement fees recognised as financing costs at levels yet to be decided

(l) Working capital treated as capital outlay funded with project

(m) Revenue assess on only firm energy output

(B) APA letter of October 29th places new emphasis on inputs from OGP-5 analysis and from Task 11 - FEZIBL. It appears to ask us two separate sets of questions which they may not have clearly in their own minds. (1) The first set of questions is about cost benefit analysis interpretation of OGP-5. They may have in mind that OGP-5 takes no account of long run security, conservation issues etc., and that the "State is looking for the lowest cost long term alternative" in this sense. The State contribution can then be seen as putting a value on these intangible benefits and the APA wants us to test OGP-5 interpretating its results as "the sensitivity of optimum scheduling" when the cost offset represented by this evaluation of the intangible benefits of Susitna i.e. 45% equity are taken into account as a reduction in Susitna capital cost. It should be noted that this contribution does "not" attract interest or charge. The 5% return on investment is a test to be applied when financial outcome of project has been determined. (2) The other "optimum scheduling" questions they may have in mind relate to the optimal financial scheduling, that is when and to what extent would it be feasible to finance the remaining project requirements by debt, given the assumptions they state. We are in a position to go ahead with answering this last question from output of FEZIBL under Task 11.

..../3

If you are happy about this interpretation of the letter we will go ahead with the financial scheduling part ~~of~~ it as part of Task 11. If on the other hand you have any doubts what it is they want perhaps you ~~would~~ should check with R. Mohn and then let us know what it is you would like done.

J. G. Warnock
Toronto

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ACRES COLB

ACRES TOR

NOVEMBER 10, 1981 P5700.07.11

Out
Nov 10/81

ATTN: P. HOOVER/C.A. DEBELIUS

FURTHER TO TELECON TODAY OUR OPINION HERE IS THAT YOUR OGP-5 RUN IN RESPONSE TO APA LETTER OCTOBER 29TH SHOULD BE CONDUCTED ON 55 O/O DEBT FINANCING AT 12 O/O AND ON ACCEPTANCE OF STATE FUNDS AS EQUITY TREATED QUITE SEPARATELY FROM DEBT. FINANCIAL OUTCOME OF PROJECT SHOULD THEN BE TESTED TO ESTABLISH THAT RETURN ON EQUITY OF 5 O/O COULD BE SUPPORTED. WE HAVE BEEN ADVISED BY E.P. YOULD THAT LEGISLATURE PROVISIONS CALL FOR THIS TEST ONLY AND NO REAL RETURN TO STATE.

CHUCK, COULD YOU PLEASE OBTAIN FOR US COPIES OF APA REGULATION 3 AAC 94.065 SETTING OUT PURPOSE OF PLAN OF FINANCE ETC. ALSO 3 AAC 94.100 RELATING TO POWER PROJECT FUND AND ANY OTHER REGULATIONS WHICH MAY AFFECT FINANCING APPROACH.

J.G. WARNOCK

TORONTO

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ACRES COLB

ACRES TOR

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

P5700. Task 11

TASK 11 - MARKETING AND FINANCE
REVISED SCOPE STATEMENT - NOVEMBER 1, 1981

1 - INTRODUCTION

During earlier phases of work on Task 11, as defined in the Plan of Study and its various revisions, progress was made towards defining possible approaches to financing of the Project. In spring 1981 work was suspended awaiting clarification of the likely approach to financing support to hydroelectric projects in general and Susitna in particular by the State of Alaska. State Bill 25 set out details of funding being made immediately available and the future plan for Susitna. It presented the possibility that the Susitna project could be financed by funds made available by legislative appropriation.

2 - DISCUSSION

Subsequently it became apparent that State funding would provide only a substantial portion of the capital required leaving a major requirement for senior debt financing to be raised in conventional markets. A series of issues was raised by Acres with APA in mid-September and on 13th October, following discussion with First Boston Corporation

APA with the output originally defined as content of the Project Overview and Internal Reports under Task 11.

(iv) The output of the financing analysis now to be completed under Task 11 will provide data for exhibits required for the FERC licence application. APA will provide Acres with input regarding State of Alaska approaches to the financing plan, particularly as these evolve from the outline of S.B.25.

(v) While consideration is being given by the State of Alaska to approaches which could affect the market-ability of Susitna output, Acres will proceed with analysis of utility profiles and energy/capacity needs and determine the basic marketing principles which will apply.

(vi) The development, construction, financing and marketing aspects of the Project each involve elements of undertainty. The current approaches being considered to marketing and financing of Susitna do not reduce substantially any of the risks involved and the full range of analyses originally proposed should be applied.

3 - SUBTASK 11.02(A) - FINANCIAL ANALYSIS

A - Objective

To update and revise the financing plan to incorporate the provisions of State Bill 25 and to test a range of likely outcomes.

B - Approach

The financial analysis will be conducted by a team of Acres staff working closely with specialist consultants and using an advanced adaptation of computer program "FEZIBL" designed to meet the specific requirements for Susitna and accounting layout appropriate for FERC and public utility practice. A range of possible financing approaches will be considered and preferred selection will be recommended which best provides for the necessary level of confidence on the part of senior debt lenders faced with a variety of uncertainties regarding the conditions applying before and during project construction and in operation of the Susitna Development.

In addition to the specific financial analysis covered by identified work packages, it is expected that there will be

a need for regular consultation with the Authority over the period up to the date at which the State of Alaska decides to file the license application and thereafter as variants of the financial plan are considered.

Work Package A -
Review Prior Analysis

Review the preliminary financial analysis in the light of the legislative provisions of SB25 and the financial parameters agreed with the Authority and their financial advisors.

Work Package B -
Formulate Alternative Financing Plan

Formulate a series of financing plans which could possibly serve the project. Examine these in the light of variation in the significant parameters and select the most favourable for further consideration and test.

Work Package C -
Test Selected Financing Plan

Determine the likely limits under which financing of Susitna would be practicable with a range of wholesale energy price

levels, potential overruns in capital cost, variations in interest rate, inflation rate and levels of state equity. This will be done by establishing the adequacy of funds to cover, with sufficient reserve margins, operating deficits which may occur in early years of operations and of the debt service cover once the various stages of development have reached a satisfactory level of financial performance.

Work Package D -
Provide Data for Optimum Scheduling

Determine the levels of senior debt and interim financing required for various stagings of construction of Watana and Devil Canyon and provide data to assist in judging optimum scheduling of on-power dates.

Work Package E -
Set up Form of Accounts

Review accounting practices and form of accounts suited to public utility financing and secure approval of certified public accountant accustomed to preparation of accounts suitable for the purposes of Federal Energy Regulatory Commission.

Work Package F -
Establish Level of Funds

Determine the level of reserves, funds and other provisions necessary to meet requirements for debt service, reserves and contingencies, renewals and replacements and acceptable guarantees.

Work Package G -
Present Results of Financial
Analysis and Test Variations

Prepare in graphic form and in clearly constructed matrices comparisons of significant indicators of financial viability for the most likely range of interest rates, wholesale energy price levels, inflation factors, state funding tested against various levels of capital cost overruns.

Work Package H -
Financial Risk Analysis

Establish the impact on the integrity of the project financing plan of:

(1) overruns in capital cost arising from engineering and construction variations from plant;

(2) variations in rates of inflation taking into consideration parallel impacts on alternative energy costs and;

(3) variations in interest rates and financial market conditions.

Identify means of mitigating and/or eliminating the impacts of such risks on overall project outcome.

Work Package I -
Prepare Proforma Set of Accounts

Select the desirable set of parameters to present the most likely outcome of a financing plan for Susitna Hydroelectric Development and, using these, prepare a set of proforma accounts including balance sheet, source and use of funds, and operating statement.

Work Package J -
Prepare Reports

Report on the outcome of the financial analysis in form suitable for:

(1) the Project Feasibility report;

(2) the application for license before Federal Energy Regulatory Commission and;

(3) the financial advisors to the Alaska Power Authority.

A further work package "K" is designed to cover consultation and analytical services required by the Authority as detailed consideration of the financing approach continues through the spring of 1982. These services will be provided in response to requests from the Authority, the managing underwriters or the financial advisors and precise definition of their nature and scope is not possible at this time.

Manhours:	1192
Consultants:	68 days
Computer Expense:	$7,500
Schedule:	Preliminary work has been in hand through November 1981 and initial discussion held with First Boston Corporation. Further work scheduled for December 1 to February 15 and thereafter as required.

4 - SUBTASK 11.02(B) - MARKET ASSESSMENT

A - OBJECTIVE

To assess the market provided by the Railbelt electric utility system and to determine the optimum basis for absorption of the output of the Susitna Hydroelectric Development. To determine viable methods of contracting with individual utilities for supply of wholesale energy from Susitna and to predict a range of rates (and a most likely level) at which this could be priced in the year of first power and in succeeding years. To recommend a basis for contract negotiations for supply of Susitna energy.

B - APPROACH

The Railbelt electrical system is served by individual utilities of differing size, nature and tariff level (as determined by Alaska Public Utility Commission). The implication of these variants must be determined and the impact of Susitna energy delivered assessed. The outcome of the assessment will be the determination of applicable wholesale rates, of a level of likely energy sales by utility, and of the annual revenues attributable to Susitna Hydroelectric Development.

A series of individual work packages can be defined as follows.

Work Package A -
Data Collection

Secure from accessible sources information concerning the recent years of operation of the Railbelt utilities including, not not restricted to, existing power sales and interchange contracts, filings with Alaska Public Utilites Commission (APUC) and FERC, testimony presented to APUC, studies of alternative energy supply modes and of electrical inter-ties between systems. Data to be consolidated in a series of files designated by utility involved.

Work Package B -
Assessment of Demand

From the ISER Medium Growth forecast and from other sources determine the pattern of demand and likely energy sales month by month over significant years of operation of Susitna Hydroelectric Development. This demand will be correlated with predicted energy deliveries from Susitna and with the individual needs of and opportunities for sales to the various utilities.

Work Package C -
Determination of Conditions Affecting
Supply, Reserve, and Emergency Standby

Energy from Susitna will in all probability mainly displace existing energy generated by other plant although a proportion of the hydroelectric output will meet new demand. Existing generating facilities may remain in operable condition and provide useful capacity for reserve and emergency standby. The cost implication and burden on the Alaska Power Authority will be assessed as an allowance charged against revenue earned from Susitna.

Work Package D -
Influence of Power Cost
Assistance Legislation

SB25 allows for power cost assistance to consumers of electricity in Alaska. The influence of this legislation on the consuming utilities purchasing wholesale energy from Susitna will be investigated.

Work Package E -
Determination of Wholesale Energy Supply,
Price and Variation with Time

As energy supplied from Susitna will, in the early years of operation, displace the output from existing generating

plant, a price determinant could be the avoided cost of such generation. Such cost will vary from utility to utility and, unless special provisions are made energy supply prices based on this level of cost could be unduly low if related to the lowest system cost. The fair value of Susitna energy deliveries and variation with time will be determined and a structure of wholesale pricing recommended.

Work Package F -
Power Contract Issues

The task will not involve formulation of draft power contracts nor will there be any discussion with utilities or others on the matter. Certain basic principle which should be considered will be established and guidelines suggested which would provide an approach satisfactory to the Authority and the necessary level of revenue assurance to senior debt lenders.

Manhours:	951
Consultants:	12 days
Computer Expense:	$1,500
Schedule:	December 1 to January 15 and thereafter as required.

SUBTASK 11.03 - SUSITNA RISK ANALYSIS

A - OBJECTIVE

To identify all relevant risks which, if realized, could impact cost, schedule, project safety, and public confidence; to determine probable consequences of realizing risks; to assess relevant preventive measures and responses; to estimate the probability that project criteria will be satisfied; and to stimulate documentation of problems and solutions to improve expected risk performance.

B - APPROACH

The risk analysis will be conducted by a separate team from the project design and cost estimating groups. This approach will permit fresh insights into potential risk areas and will also facilitiate identification of possible preventive measures which, if incorporated into preliminary designs and proposed construction approaches, could serve to improve the overall project risk expectations. A series of individual work packages will be accomplished as follows.

Work Package A -
Plan, Cost Estimate,
and Schedule Review

A review will be made of the currently proposed project plans, "not to exceed" cost estimate, and construction schedule. A summary statement of the current position will be prepared to set forth important underlying assumptions, areas wherein uncertainties exist (e.g., the extent to which subsurface investigations may have failed to locate potential difficult foundation problems), major design criteria (e.g., flood crest elevation and return frequency for temporary cofferdams), and proposed construction methods and sequence. In consultation with members of the cost estimating team, a major activity critical path method (CPM) chart will be prepared.

Work Package B -
Risk List Development

A list of all risks to be considered in the analysis will be developed. Each risk will be defined and initial gross assessments will be made of the degree of interdependency with other risks. Probability of realizing any given risk magnitude level will be determined from readily available data or, in the absence of sufficient data, assessment needs to be provided in Work Package D will be identified.

(Note that risks themselves will be treated, to the extent possible, as independent of the activities or project components. In this regard, for example, the probability that a particular flood level will occur is the same regardless of whether a cofferdam or spillway is being considered. The consequences of realizing particular risk magnitudes will, of course, vary from activity to activity and from component to component.)

Work Package C -
Methodology Review

Upon completion of Work Package A and while Work Package B is under way, a management review of proposed documentation and risk analysis programs will be conducted. Requirements for software revision will be identified and specified and the adequacy of Work Package A results will be assessed.

Work Package D -
Risk Assessments

Risk lists will be reviewed and initial interdependency assumptions will be refined. Detailed data collection and review will be accomplished to determine as precisely as possible risk realization probabilities. In the absence of hard data, decision analysis by appropriate disciplines will

define probabilities. Assumptions, estimates, and sources will be documented.

Work Package E -
Transformation Assessments

The direct consequence of any given risk is best determined in terms of "natural" criteria. In other words, risk analysts will be encouraged to assess consequences in the most appropriate terms (e.g., repair time, cost impact, road loss, fuel requirements, etc.) The purpose of this work package is to define transformation criteria which will permit reduction of "natural" criteria to a single common denominator. (This single criterion will most likely be cost since, for example, a schedule slippage can be translated into lost project revenues, increased interest during construction, overtime costs, etc.)

Work Package F -
Software Revisions

Existing software will be modified as necessary to accommodate the results of prior work packages and to minimize abortive runs during computer analysis. Test data will be produced and calculated manually. The computer program will then be used to process the test data to ensure that the system is performing properly.

Work Package G -
Consequence/Response Criteria Assessments

For each major activity in the overall CPM and/or for each major component in the project, the consequences of realizing each possible risk magnitude will be assessed and estimated. Responses will be defined as actions taken if consequences are realized. For the first iteration of the computerized risk analysis, design criteria and construction procedures will be held exactly as they have been set forth by the project design group (this will be the base case). To the extent that preventive responses are possible (for example, starting an activity sooner or raising the height of a temporary cofferdam), their values will be tested as perturbations to the base case in later work packages.

Work Package H -
Review and Revise

Prior to starting actual computations, the efforts accomplished to this point will be reviewed in detail and revisions will be made as appropriate.

Work Package I -
Initial Computations
and Interpretations

At this point, the data will be processed using the appropriately modified software. Preliminary results will be reviewed for anomalies and errors, final program debugging will occur, and interpretation of results will be made for the base case. Preventive responses will then be tested to determine the extent to which the expected project costs and schedules would change with modifications to certain design criteria, construction approach, etc. Initial interpretations will be made.

Work Package J -
Assessment of Emergency Generation

If a risk is realized, the resulting consequences may cause the loss of Susitna generation. A set of responses is then required in order to assess the ability of the system or other generation facilities to provide emergency power. Whereas Subtask 6.36, generation planning, provides an analysis and assessment of the system's ability to respond to planned or forced outages based on plant operating experience, this work package will investigate the range of responses required for the low probability but catastrophic loss of Susitna generation. The results of this assessment

will be incorporated into the interpretations of Work Package L.

Work Package K -
Project Response and Update

Initial results and interpretations will be fed back to the project team and comments will be reviewed.

Risk/consequence/response data will be updated as appropriate and, to the extent that desirable changes are identified in design criteria or assumed construction procedures, these will be considered for incorporation by the project design team.

Work Package L -
Final Computations and Interpretations

Final runs will be made and a series of expected values will be produced for cost, schedule, and other items as necessary. Graphical representations relating probability to possible costs and completion dates will be produced for the project as a whole and for individual risk categories as appropriate. The most important contributors to risk will be identified and a final risk analysis report will be produced.

Manhours: 2400

Computer Expense: $4,000

Schedule: December 1, 1981 through January 1982

Hr Draft

file

P5700. Task 11

Amended Nov 26

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

TASK 11 - MARKETING AND FINANCE
REVISED SCOPE STATEMENT - NOVEMBER 1, 1981

1 - INTRODUCTION

During earlier phases of work on Task 11, as defined in the Plan of Study and its various revisions, progress was made towards defining possible approaches to financing of the Project. In spring 1981 work was suspended awaiting clarification of the likely approach to financing support to hydroelectric projects in general and Susitna in particular by the State of Alaska. State Bill 25 set out details of funding being made immediately available and the future plan for Susitna. It presented the possibility that the Susitna project could be financed by funds made available by legislative appropriation.

2 - DISCUSSION

Subsequently it became apparent that State funding would provide only a substantial portion of the capital required leaving a major requirement for senior debt financing to be raised in conventional markets. A series of issues was raised by Acres with APA in mid-September and on 13th October, following discussion with First Boston Corporation

present, specific direction was provided regarding the further work now required under Task 11. (The following subnumbers refer to the six questions posed by Acres in attachment to letter of September 15, 1981.)

(i) It was agreed that financial analysis would be recommended using parameters appropriate to the likely financing plan with substantial State "equity" funding and the current predictions of future conditions. The work would be carried out using Acres existing program (FEZIBL) but with this modified to comply with the accounting practices of publicly owned power utilities. First Boston Corporation would provide consulting advice as required.

(ii) With the levels of State financing envisaged of 30 to 45 per cent, or 60 per cent, it was considered likely that, within this range and within the constraints presented by the nature of consumer utilities, a financing plan could be developed which could be based largely on tax exempt revenue bonds.

(iii) In view of the vital necessity to arrive at firm and convincing financing and marketing plans, all further efforts under Task 11 would now be concentrated on these elements of the work and on related risk analysis. The Project Feasibility Report will provide

APA with the output originally defined as content of the Project Overview and Internal Reports under Task 11.

(iv) The output of the financing analysis now to be completed under Task 11 will provide data for exhibits required for the FERC licence application. APA will provide Acres with input regarding State of Alaska approaches to the financing plan, particularly as these evolve from the outline of S.B.

(v) While consideration is being given by the State of Alaska to approaches which could affect the market-ability of Susitna output, Acres will proceed with analysis of utility profiles and energy/capacity needs and determine the basic marketing principles which will apply.

(vi) The development, constriction, financing and marketing aspects of the Project each involve elements of undertainty. The current approaches being considered to marketing and financing of Susitna do not reduce substantially any of the risks involved and the full range of analyses originally proposed should be applied.

3 - SUBTASK 11.02(A) - FINANCIAL ANALYSIS

A - Objective

To update and revise the financing plan to incorporate the provisions of State Bill 25 and to test a range of likely outcomes.

B - Approach

The financial analysis will be conducted by a team of Acres staff working closely with specialist consultants and using an advanced adaptation of computer program "FEZIBL" designed to meet the specific requirements for Susitna and accounting layout appropriate for FERC and public utility practice. A range of possible financing approaches will be considered and preferred selection will be recommended which best provides for the necessary level of confidence on the part of senior debt lenders faced with a variety of uncertainties regarding the conditions applying before and during project construction and in operation of the Susitna Development.

In addition to the specific financial analysis covered by identified work packages, it is expected that there will be

a need for regular consultation with the Authority over the period up to the date at which the State of Alaska decides to fill the license application and thereafter as variants of the financial plan are considered.

Work Package A -
Review Prior Analysis

Review the preliminary financial analysis in the light of the legislative provisions of SB25 and the financial parameters agreed with the Authority and their financial advisors.

Work Package B -
Formulate Alternative Financing Plan

Formulate a series of financing plans which could possibly serve the project. Examine these in the light of variation in the significant parameters and select the most favourable for further consideration and test.

Work Package C -
Test Selected Financing Plan

Determine the likely limits under which financing of Susitna would be practicable with a range of wholesale energy price

levels, potential overruns in capital cost, variations in interest rate, inflation rate and levels of state equity. This will be done by establishing the adequacy of funds to cover, with sufficient reserve margins, operating deficits which may occur in early years of operations and of the debt service cover once the various stages of development have reached a satisfactory level of financial performance.

Work Package D -
Provide Data for Optimum Scheduling

Determine the levels of senior debt and interim financing required for various stagings of construction of Watana and Devil Canyon and provide data to assist in judging optimum scheduling of on-power dates.

Work Package E -
Set up Form of Accounts

Review accounting practices and form of accounts suited to public utility financing and secure approval of certified public accountant accustomed to preparation of accounts suitable for the purposes of Federal Energy Regulatory Commission.

Work Package F -
Establish Level of Funds

Determine the level of reserves, funds and other provisions necessary to meet requirements for debt service, reserves and contingencies, renewals and replacements and acceptable guarantees.

Work Package G -
Present Results of Financial
Analysis and Test Variations

Prepare in graphic form and in clearly constructed matrices comparisons of significant indicators of financial viability for the most likely range of interest rates, wholesale energy price levels, inflation factors, state funding tested against various levels of capital cost overruns.

Work Package H -
Financial Risk Analysis

Establish the impact on the integrity of the project financing plan of:

(1) overruns in capital cost arising from engineering and construction variations from plant;

(2) variations in rates of inflation taking into consideration parallel impacts on alternative energy costs and;

(3) variations in interest rates and financial market conditions.

Identify means of mitigating and/or eliminating the impacts of such risks on overall project outcome.

Work Package I -
Prepare Proforma Set of Accounts

Select the desirable set of parameters to present the most likely outcome of a financing plan for Susitna Hydroelectric Development and, using these, prepare a set of proforma accounts including balance sheet, source and use of funds, and operating statement.

Work Package J -
Prepare Reports

Report on the outcome of the financial analysis in form suitable for:

(1) the Project Feasibility report;

(2) the application for license before Federal Energy Regulatory Commission and;

(3) the financial advisors to the Alaska Power Authority.

A further work package "K" is designed to cover consultation and analytical services required by the Authority as detailed consideration of the financing approach continues through the spring of 1982. These services will be provided in response to requests from the Authority, the managing underwriters or the financial advisors and precise definition of their nature and scope is not possible at this time.

Manhours:	1192
Consultants:	68 days
Computer Expense:	$7,500
Schedule:	Preliminary work has been in hand through November 1981 and initial discussion held with First Boston Corporation. Further work scheduled for December 1 to February 15 and thereafter as required.

4 - SUBTASK 11.02(B) - MARKET ASSESSMENT

A - OBJECTIVE

To assess the market provided by the Railbelt electric utility system and to determine the optimum basis for absorption of the output of the Susitna Hydroelectric Development. To determine viable methods of contracting with individual utilities for supply of wholesale energy from Susitna and to predict a range of rates (and a most likely level) at which this could be priced in the year of first power and in succeeding years. To recommend a basis for contract negotiations for supply of Susitna energy.

B - APPROACH

The Railbelt electrical system is served by individual utilities of differing size, nature and tariff level (as determined by Alaska Public Utility Commission). The implication of these variants must be determined and the impact of Susitna energy delivered assessed. The outcome of the assessment will be the determination of applicable wholesale rates, of a level of likely energy sales by utility, and of the annual revenues attributable to Susitna Hydroelectric Development.

A series of individual work packages can be defined as follows.

Work Package A -
Data Collection

Secure from accessible sources information concerning the recent years of operation of the Railbelt utilities including, not not restricted to, existing power sales and interchange contracts, filings with Alaska Public Utilites Commission (APUC) and FERC, testimony presented to APUC, studies of alternative energy supply modes and of electrical inter-ties between systems. Data to be consolidated in a series of files designated by utility involved.

Work Package B -
Assessment of Demand

From the ISER Medium Growth forecast and from other sources determine the pattern of demand and likely energy sales month by month over significant years of operation of Susitna Hydroelectric Development. This demand will be correlated with predicted energy deliveries from Susitna and with the individual needs of and opportunities for sales to the various utilities.

Work Package C -
Determination of Conditions Affecting
Supply, Reserve, and Emergency Standby

Energy from Susitna will in all probability mainly displace existing energy generated by other plant although a proportion of the hydroelectric output will meet new demand. Existing generating facilities may remain in operable condition and provide useful capacity for reserve and emergency standby. The cost implication and burden on the Alaska Power Authority will be assessed as an allowance charged against revenue earned from Susitna.

Work Package D -
Influence of Power Cost
Assistance Legislation

SB25 allows for power cost assistance to consumers of electricity in Alaska. The influence of this legislation on the consuming utilities purchasing wholesale energy from Susitna will be investigated.

Work Package E -
Determination of Wholesale Energy Supply,
Price and Variation with Time

As energy supplied from Susitna will, in the early years of operation, displace the output from existing generating

plant, a price determinant could be the avoided cost of such generation. Such cost will vary from utility to utility and, unless special provisions are made energy supply prices based on this level of cost could be unduly low if related to the lowest system cost. The fair value of Susitna energy deliveries and variation with time will be determined and a structure of wholesale pricing recommended.

Work Package F -
Power Contract Issues

The task will not involve formulation of draft power contracts nor will there be any discussion with utilities or others on the matter. Certain basic principle which should be considered will be established and guidelines suggested which would provide an approach satisfactory to the Authority and the necessary level of revenue assurance to senior debt lenders.

Manhours:	951
Consultants:	12 days
Computer Expense:	$1,500
Schedule:	December 1 to January 15 and thereafter as required.

SUBTASK 11.03 - SUSITNA RISK ANALYSIS

A - OBJECTIVE

To identify all relevant risks which, if realized, could impact cost, schedule, project safety, and public confidence; to determine probable consequences of realizing risks; to assess relevant preventive measures and responses; to estimate the probability that project criteria will be satisfied; and to stimulate documentation of problems and solutions to improve expected risk performance.

B - APPROACH

The risk analysis will be conducted by a separate team from the project design and cost estimating groups. This approach will permit fresh insights into potential risk areas and will also facilitiate identification of possible preventive measures which, if incorporated into preliminary designs and proposed construction approaches, could serve to improve the overall project risk expectations. A series of individual work packages will be accomplished as follows.

Work Package A -
Plan, Cost Estimate,
and Schedule Review

A review will be made of the currently proposed project plans, "not to exceed" cost estimate, and construction schedule. A summary statement of the current position will be prepared to set forth important underlying assumptions, areas wherein uncertainties exist (e.g., the extent to which subsurface investigations may have failed to locate potential difficult foundation problems), major design criteria (e.g., flood crest elevation and return frequency for temporary cofferdams), and proposed construction methods and sequence. In consultation with members of the cost estimating team, a major activity critical path method (CPM) chart will be prepared.

Work Package B -
Risk List Development

A list of all risks to be considered in the analysis will be developed. Each risk will be defined and initial gross assessments will be made of the degree of interdependency with other risks. Probability of realizing any given risk magnitude level will be determined from readily available data or, in the absence of sufficient data, assessment needs to be provided in Work Package D will be identified.

(Note that risks themselves will be treated, to the extent possible, as independent of the activities or project components. In this regard, for example, the probability that a particular flood level will occur is the same regardless of whether a cofferdam or spillway is being considered. The consequences of realizing particular risk magnitudes will, of course, vary from activity to activity and from component to component.)

Work Package C -
Methodology Review

Upon completion of Work Package A and while Work Package B is under way, a management review of proposed documentation and risk analysis programs will be conducted. Requirements for software revision will be identified and specified and the adequacy of Work Package A results will be assessed.

Work Package D -
Risk Assessments

Risk lists will be reviewed and initial interdependency assumptions will be refined. Detailed data collection and review will be accomplished to determine as precisely as possible risk realization probabilities. In the absence of hard data, decision analysis by appropriate disciplines will

define probabilities. Assumptions, estimates, and sources will be documented.

Work Package E -
Transformation Assessments

The direct consequence of any given risk is best determined in terms of "natural" criteria. In other words, risk analysts will be encouraged to assess consequences in the most appropriate terms (e.g., repair time, cost impact, road loss, fuel requirements, etc.) The purpose of this work package is to define transformation criteria which will permit reduction of "natural" criteria to a single common denominator. (This single criterion will most likely be cost since, for example, a schedule slippage can be translated into lost project revenues, increased interest during construction, overtime costs, etc.)

Work Package F -
Software Revisions

Existing software will be modified as necessary to accommodate the results of prior work packages and to minimize abortive runs during computer analysis. Test data will be produced and calculated manually. The computer program will then be used to process the test data to ensure that the system is performing properly.

Work Package G -
Consequence/Response Criteria Assessments

For each major activity in the overall CPM and/or for each major component in the project, the consequences of realizing each possible risk magnitude will be assessed and estimated. Responses will be defined as actions taken if consequences are realized. For the first iteration of the computerized risk analysis, design criteria and construction procedures will be held exactly as they have been set forth by the project design group (this will be the base case). To the extent that preventive responses are possible (for example, starting an activity sooner or raising the height of a temporary cofferdam), their values will be tested as perturbations to the base case in later work packages.

Work Package H -
Review and Revise

Prior to starting actual computations, the efforts accomplished to this point will be reviewed in detail and revisions will be made as appropriate.

Work Package I -
Initial Computations
and Interpretations

At this point, the data will be processed using the appropriately modified software. Preliminary results will be reviewed for anomalies and errors, final program debugging will occur, and interpretation of results will be made for the base case. Preventive responses will then be tested to determine the extent to which the expected project costs and schedules would change with modifications to certain design criteria, construction approach, etc. Initial interpretations will be made.

Work Package J -
Assessment of Emergency Generation

If a risk is realized, the resulting consequences may cause the loss of Susitna generation. A set of responses is then required in order to assess the ability of the system or other generation facilities to provide emergency power. Whereas Subtask 6.36, generation planning, provides an analysis and assessment of the system's ability to respond to planned or forced outages based on plant operating experience, this work package will investigate the range of responses required for the low probability but catastrophic loss of Susitna generation. The results of this assessment

will be incorporated into the interpretations of Work Package L.

Work Package K -
Project Response and Update

Initial results and interpretations will be fed back to the project team and comments will be reviewed.

Risk/consequence/response data will be updated as appropriate and, to the extent that desirable changes are identified in design criteria or assumed construction procedures, these will be considered for incorporation by the project design team.

Work Package L -
Final Computations and Interpretations

Final runs will be made and a series of expected values will be produced for cost, schedule, and other items as necessary. Graphical representations relating probability to possible costs and completion dates will be produced for the project as a whole and for individual risk categories as appropriate. The most important contributors to risk will be identified and a final risk analysis report will be produced.

Manhours: 2400

Computer Expense: $4,000

Schedule: December 1, 1981 through January 1982

xc [illegible]
xc JGWL
xc JDL
✓ JWH
✓ DM/JRP

TELEX AS INDICATED TO PROVIDE RECORD
TELEX AT BOTH TORONTO & COLUMBIA
REPEAT TO C. A. DEBELIUS - COLUMBIA
J. G. WARNOCK - TORONTO

J. D. LAWRENCE
BUFFALO
SUSITNA
TASK 11
FINANCING AND MARKETING

For review in conjunction with Mohn's letter dated Oct. 29 and coordination with current Buffalo energy wtr assessments before transmittal

11/9

FOLLOWING DISCUSSION WITH T. McGUIRE AND R. MOHN AT BUFFALO MEETINGS 13TH OCTOBER. WE HAVE REVIEWED LIKELY OUTCOME OF STATE LEGISLATURE APPROVAL APPROACH AND IMPACT OF MOST PROBABLE CAPITAL COST ON SUSITNA ENERGY PRICING. TASK 11 CAN BE RESCOPED WITHIN REMAINING BUDGET ALLOTMENT TO INCLUDE FINANCIAL ANALYSES, MARKET ASSESSMENT AND RISK ANALYSES. IN VIEW URGENT NECESSITY TO INITIATE WORK AND MEET MID JANUARY SCHEDULE WOULD RECOMMEND TELEXING APA AS FOLLOWS: QUOTE

FOLLOWING DISCUSSIONS RELATING TO MOST LIKELY RANGE OF FUNDING FOR SUSITNA FROM STATE OF ALASKA AND YOUR INSTRUCTIONS LIMIT OUR FURTHER WORK ON TASK 11 TO FIRSTLY FINANCIAL ANALYSES SECONDLY MARKETING ASSESSMENT AND THIRDLY RISK ANALYSES. WE HAVE RESCOPED TASK 11 BY ELIMINATING FUTURE EFFORT ON PROJECT OVERVIEW AND INTERNAL REPORTS AND APPLYING LEVEL OF EFFORT EQUIVALENT TO REMAINING FUNDS BUDGETED FOR TASK 11 TO WORK ITEMS AS ABOVE. BRIEF SUBTASK DESCRIPTIONS FOLLOW: - FINANCIAL ANALYSES
OBJECTIVE UPDATE AND REVISE FINANCING PLAN TO INCORPORATE LEGISLATIVE PROVISIONS SB25 AND RANGE OF LIKELY OUTCOMES.
METHODOLOGY IDENTIFY BASIC FINANCING OPTIONS AND APPLY COMPUTER PROGRAMED ANALYSIS FEZIBL TO GENERATE ALL RELEVANT AND REQUIRED ACCOUNTING AND FINANCING DATA OVER PROJECT LIFE.
SCHEDULE - BEGINNING NOVEMBER 9 TEST COMPUTER ANALYSIS AND ASCERTAIN THAT OUTPUTS CONFIRM TO REQUIRED ACCOUNTING PRACTICES TO SERVE NEEDS OF APA, FERC, FIRST BOSTON AND OTHER PARTIES. CONDUCT ANALYSES WITH MOST RECENTLY AVAILABLE COST, SCHEDULE, EXPENDITURE PROGRAM AND ENERGY OUTPUT INFORMATION AND AGREED FINANCIAL PARAMETERS AND RANGES OF VALUES. PRESENT RESULTS IN MATRIX FORM TO DEMONSTRATE IMPACT OF SUCH VARIABLES AS STATE FINANCIAL CONTRIBUTION, INTEREST RATES ON SENIOR DEBT CAPITAL COST, SCHEDULE OF ENERGY DELIVERIES ETC. PROVIDE FOR INTERACTION WITH APA, FIRST BOSTON TO ALLOW REFINEMENT OF ANALYSES AND OUTPUT TO PROVIDE FOR FINAL OUTPUTS IN SUITABLE FORM FOR FEASIBILITY REPORT, LICENSE APPLICATION AND FINANCING CONSIDERATIONS IN MID JANUARY 1982 IN PARALLEL WITH FOREGOING IDENTIFY PRINCIPAL FINANCING RISKS WITHIN RANGE OF ALTERNATIVE PROTECT OUTCOMES AND DETERMINE IMPACT AND PROBABILITY IN COORDINATION WITH RISK ANALYSES SUBTASK BELOW.
MANHOURS 1192

SCHEDULE NOV. 9, 1981 TO JAN 15, 1982 AND AS REQUIRED TO COMPLETION OF LICENSE APPLICATION

COMPUTER EXPENSE $7500

CONSULTANTS 68 MAN DAYS

MARKETING ASSESSMENT

OBJECTIVE ASSESS LIKELY MARKET RESPONSE TO AVAILABLE OUTPUT FROM SUSITNA AND DETERMINE PATTERN OF WHOLESALE PRICING LIKELY TO BE ACCEPTABLE TOGETHER WITH RESULTING REVENUE.

METHODOLOGY IDENTIFY ELEMENTS OF RAILBELT MARKET TO BE SERVED BY SUSITNA AND DETERMINE LIKELY PROGRAM AND PRICE AT WHICH AVAILABLE ENERGY/POWER WOULD BE ABSORBED INVOLVES ANALYSIS OF UTILITY DEMAND PROFILES AND DEVELOPING CHARACTERISTICS WITH TIME AS INDICATED BY OGP-5 AND OTHER STUDIES INCLUDING ANCHORAGE - FAIRBANKS INTERTIE. DETERMINE LIKELY ACCEPTABLE BASIS UNDER WHICH UTILITIES WOULD CONTRACT FOR WHOLESALE SUPPLY.

SCHEDULE BEGINNING NOVEMBER 16 REVIEW AND ANALYSE ALL AVAILABLE DATA RELATING TO RAILBELT UTILITIES AND IN EARLY DECEMBER PROVIDE APA WITH DRAFT OF INITIAL APPRAISAL OF MARKETING PLAN. REVISE AND RESTRUCTURE AS NECESSARY DURING DECEMBER AND COMPLETE REQUIRED PORTION OF REPORT INPUT BY JANUARY 15, 1982.

MAN HOURS 951

SCHEDULE NOV 1, 1981 TO JAN 15, 1982 AND AS REQUIRED TO COMPLETION OF LICENSE APPLICATION

COMPUTER EXPENSE $1500

CONSULTANTS 12 MAN DAYS

RISK ANALYSES TO BE PROVIDED IN SIMILAR FORM TO ABOVE BY C. A. DEBELIUS NOTING THAT FINANCING RISK MANHOURS INCLUDED IN FINANCIAL ANALYSIS LEVEL OF EFFORT.

QUOTE WE WOULD APPRECIATE TELEX FROM APA RELEASING US TO SUPPLY FULL EFFORT TO TASK 11 IMMEDIATELY. ANALYSIS WILL REQUIRE CAPITAL COST AND ENERGY INPUTS FROM TASK 6 EARLY IN WEEK OF NOVEMBER 9.

Attachment A
(To letter of November 26, 1981)

SUSITNA HDYROELECTRIC PROJECT
TASK 11 FINANCIAL ANALYSIS

Financial Parameters

At a meeting in Acres American, Buffalo offices on October 13th agreement was reached with T. McGuire APA and J. Raben, First Boston Corporation on financial parameters which should be used for analysis of the Susitna Hydroelectric Project. These are listed below together with "average" parameters used in the early stage of "test" financial analysis.

		Low	Median	High	"Test" Values
(a)	% Funding of the total project cost from State of Alaska	30	45	60	$2 bn
(b)	% ROI on State Funds (employed for test of financial viability only)	5	5	5	5
(c)	% Interest rate on senior debt funds	10	-	14	12 and 14
(d)	Senior debt maturity (with interest and principal payments levelised over period commencing one year following the year of full plant operation) - years	30	30	30	35
(e)	Inflation rate %	7	7	7	7 and 9
(f)	Debt service cover applied to the annual requirements for levelised senior debt service	1.25 rising to 1.5			1.25 rising to 1.5

		Low	Median	High	"Test" Values
(g)	% Rate, based on original capital cost with allowance for inflation, at which "Replacement and Renewals" are provided for	3/4	3/4	3/4	3/4
(h)	Inflation rate applied to construction costs during the period of construction	10	10	10	7 and 9
(i)	Inlfation rate applied operating costs during the period of operation	8	8	8	7 and 9
(j)	"Reserve and Contingency" fund as a % of annual operating costs set aside and replinshed year by year	not decided			400%
(k)	Committment and placement fees as bond financing costs	not decided			1/2% of bond value

20/10/81

Susitna Hydroelectric Project
Marketing and Financing - Task 11

Financial Analysis

A) Following discussion of the approach now appropriate to financing of the Susitna Project it was decided to adopt the following criteria:-

1. to reflect the likely mix and cost of State and debt market financing:-

	Low	Median	High
(a) % Funding from State of Alaska (% of total project cost)	30%	45%	60%
(b) % Return on investment ~~applicable~~ required by to State funds		5%	
(c) % Interest rate on senior debt financing	10%		14%
(d) Debt maturity period commences in the year following the first full year of operation through semi annual level debt service to amortise the principal over ~~25~~ 30 years from commencement of debt service		30 years	
(e) Interest and principal payments on debt services to be levelised over period set out in sub paragraph (d)			
(f) Interest to be capitalised to 1 year after full operation of each project segment (e.g. Watana 400 MW Watana 800 MW or Devil Canyon 600 MW)			

..../2

(g) Committment fee on senior debt (would be of order of ¼ to 1% per annum on the undrawn balance)	to be decided + Standby to on Line of Credit ½% p.a.
(h) Placement fee with Bond Discounts for senior debt (could be in range of 0.3 to 0.5% of 1% of the principal amount)	to be decided
(i) Draw down (during Construction)	assume quarterly draw down to nearest $5 million of requirements rounded upwards
2. to provide for the necessary funds	
(a) To allow for Replacements and Renewals (Cap. Cost during op'ns) Escalation: 10% cost costs 8% op. costs.	¾% of original capital cost per annum from the first year of full operation (including with capital cost allowance for inflation at 10% p.a.) and with amounts increased to allow for inflation thereafter at 8% p.a.
(b) FUND To allow for Reserves and Contingencies (or) 10% of Debt Service for the next year?	accumulate 10% of ~~annual gross revenue~~ from first year of full operation until fund equals 6 months gross revenues and maintain at this level thereafter
(c) To allow for ~~interest cover~~ DEBT SERVICE RESERVE FUND Say debt service Reserve Fund (cap. + int.) all funds on hand Cash	maintain 1.25 times ~~(average) initially rising to 1.5 times~~ cover on requirements for annual debt service on senior debt. Cover of 1.0 only required for 5% legislated return on State ~~funding~~ and this amount may form portion of senior debt cover

Debt Service Fund

Debt Service Reserve Fund = 1 yrs' debt payment

Debt Service fund always Ø

..../3

Note (i) Amounts accumulated in funds to be invested with interest used to reduce (or subsidise) the rates at which energy is sold.

(ii) In relation to provisions for interest cover this should be funded for the year ahead in reserve and recirculated with adjustment year by year. Any surplus arising in a given year can be set against cover requirements for following year.

3. to allow for various charges on capital account

(a) Interest on debt to be capitalised to one year past first year of full operation for each project segment

(b) Working capital may be treated as capital required for project

(c) Construction cost estimates to be subject to an allowance for inflation equal to 10% p.a.

4. to allow for various charges on earnings account

(a) Revenue to be accounted for firm energy only

(b) Secondary energy revenue (assessed with appropriate probability and rate/KWh) should be accumulated in a separate fund and applied, as considered advisable to funds 2(a), (b) or (c)

1 case with 2nd Energy
1st case equivalent

..../4

(c) Operating cost estimates to be subject to an allowance for inflation equal to 8% p.a.

(d) Operating costs to be deducted from the 5% on State of Alaska investment

(e) Balance of the 5% on State of Alaska investment may be available to pay debt service on senior debt

(Note: It must be established whether the 5% return on State investment has to be returned to the State and reallocated to meet costs 4(d) and (e) above or whether the deductions of allowable costs can be made by APA)

B)

1. Financial analysis of cases covering the range of criteria will involve the following runs:-

(a)	% Funding	%ROI	% Interest on Senior debt	Debt Maturity Years	Construction	% Inflati p.a. Operatio
Run x 1	30	5	10	30	10	8
x 2	30	5	14	30	10	8
x 3	45	5	10	30	10	8
x 4	45	5	14	30	10	8
x 5	60	5	10	30	10	8
x 6	60	5	14	30	10	8

..../5

2. Energy costs in mills/KWh will be determined initially for 1993 i.e. year 8 of the schedule. Then to obtain an overall picture of the likely outcome the FEZIBL program will be run for

(i) Starting mill rate increased in subsequent years by inflation @ 8% per annum with this rate of increase applying also to operating costs

(ii) Starting mill rate increased in subsequent years by inflation in operating costs only @ 8% per annum

(iii) Starting mill rate increased in subsequent years by a median rate between 2(i) and 2(ii) of 3 1/3% with operating costs increasing @ 8% per annum

(Note:- Any construction costs incurred even subsequent to commercial operation will be increased at 10% p.a. Renewals and replacement allowances to increase at 8% p.a.)

Timing of Debt + Equity funding

Total funding = 1981 cost + Esc + IDC

30% State ⟶ 60% State

Rev = 210 $000
DSC = 582
Cash = 141 $000

Stak Contribution – $2.5 billion.

Capcost +7% from 18 NOV 81

Entry Price	120 mills +7% pa.						135 mills +10% pa						150 mills +10% pa.					
	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
Capital Cost Increment from Base of Rev $5.2996.	423	485	555	1076	1151	1318	490	592	717	1469	1616	1956	544	658	796	1632	1796	2173
-10% DSC	3·5	3·7	2·6	2·6	1·7	1·8	3·7	4·0	2·7	3·4	2·2	2·7	3·9	4·2	2·7	3·9	2·8	3·2
CasL	-	-	(436)	(102)	206	540	-	-	(74)	391	1071	1124	-	-	131	621	1261	1383
Base DSC	2·8	2·8	2·6	2·2	1·5	1·6	2·9	3·1	2·7	2·8	1·8	2·1	3·0	3·2	2·7	3·0	1·9	2·4
CasL	-	-	(1093)	(418)	(159)	(45)	-	-	(683)	75	658	1303	-	-	(478)	305	1111	1278
+10% DSC	2·3	2·2	2·2	1·9	1·3	1·3	2·4	2·5	2·6	2·4	1·7	1·8	2·5	2·6	2·6	2·6	1·8	1·9
CasL	(109)	(98)	(1597)	(733)	(493)	(464)	(38)	-	(1366)	(240)	144	898	-	-	(1106)	(10)	529	1472
+20%																		
+30% DSC	1·7	1·6	1·5	1·3	0·9	0·9	1·8	1·7	1·7	1·6	1·2	1·3	1·9	1·8	1·9	1·8	1·4	1·5
CasL	(337)	(384)	(2234)	(1360)	(1161)	(1302)	(266)	(252)	(2014)	(867)	(524)	(322)	(207)	(166)	(1893)	(637)	(244)	69
+40% DSC													1·6	1·6	1·6	1·6	1·2	1·3
CasL													(322)	(310)	(2212)	(951)	(579)	(351)
WATMM Alone Base Capital Cost $3.276 b. DSC	2·3	1·6	1·6	1·6	1·6	1·7	1·8	1·6	1·6	1·6	1·6	1·7	1·6	1·6	1·6	1·6	1·6	1·7
CasL	(176)	(184)	(52)	(57)	(22)	76	(337)	(342)	(194)	(170)	(87)	119	(393)	(401)	(252)	(233)	(169)	72
Capcost	+10%						+30%						+40%					

Rev = 21k $000
Cash = 141, $000 DSC = 582

Stak Contribution – $2.0 billion.

Cap cost +7½ inflation.
18 Nov. 81

Entry Price	120 mills +7% pa.						135 mills +10% pa						150 mills +10% pa					
	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
Capital Cost Increment from Base of REV $5'2996.	423	485	555	1076	1151	1318	490	592	717	1469	1616	1956.	544	658	796	1672	1796	2173
-10% DSC Cash																		
Base DSC	2·2	2·1	2·1	1·8	1·3	1·3	2·3	2·3	2·5	2·4	1·8	1·8	2·4	2·5	2·6	2·6	1·9	1·9
Cash	(141)	(138)	(1509)	(708)	(485)	(454)	(70)	(5)	(1289)	(215)	152	1008.	(11)	-	(1120)	16	563	1568
+10% DSC Cash							2·0 (184)	1·9 (149)	2·0 (1107)	1·9 (528)	1·5 (182)	1·6 107						
+20% DSC Cash							1·7 (299)	1·6 (292)	1·6 (1926)	1·6 (842)	1·2 (516)	1·3 (312)						
+30% DSC Cash													1·6 (354)	1·5 (350)	1·5 (2123)	1·5 (926)	1·2 (571)	1·3 (341)

WATTYA Alone
Base Capital Cost $3·276 b.
DSC
Cash

Cap cost +10% | +30% | +40%

ALASKA POWER AUTHORITY — SUSITNA HYDROELECTRIC PROJECT

COMPARISON WITH CAPITAL COST ESC. FROM 1982 AT 7% PA. — STATE CONTRIBUTION $2.58M

PS 700 !!

WATANA + DEVIL CANYON $5299M

ENTRY PRICE: MILLS/KWh 120 + 7% p.a | 135 + 10% PA. | 150 + 10% p.a

YEAR :-	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2013
REVENUE $m	423	485	555	1076	1151	1318	490	592	717	1469	1616	1956	544	658	796	1652	1796	2173
-10% DS/Co.	3.5	3.7	2.6	2.6	1.7	1.8	3.7	4.0	2.7	3.4	2.2	2.7	3.9	4.2	2.7	3.9	2.8	3.2
Cash	-	-	(436)	(102)	206	540	-	-	(74)	391	1071	1124	-	-	131	621	1261	1383
BASE CASE $5,299m DS/Co	2.8	2.8	2.6	2.2	1.5	1.6	2.9	3.1	2.7	2.8	1.8	2.1	3.0	3.2	2.7	3.0	1.9	2.4
Cash	-	-	(1093)	(418)	(159)	(45)	-	-	(683)	75	658	1303	-	-	(478)	305	1111	1278
+10% DS/Co	2.3	2.2	2.2	1.9	1.3	1.3	2.4	2.5	2.6	2.4	1.7	1.8	2.5	2.6	2.6	2.6	1.8	1.9
Cash	(109)	(98)	(1597)	(733)	(493)	(464)	(36)	-	(1366)	(240)	144	898	-	-	(1106)	(10)	529	1472
+2% DS/Co	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
+30% DS/Co	1.7	1.6	1.5	1.3	0.9	0.9	1.8	1.7	1.7	1.6	1.2	1.3	1.9	1.8	1.9	1.8	1.4	1.5
Cash	(337)	(384)	(2234)	(1360)	(1161)	(1302)	(266)	(252)	(2014)	(867)	(524)	(322)	(207)	(166)	(1893)	(637)	(244)	69
+40% DS/Co	-	-	-	-	-	-	-	-	-	-	-	-	1.6	1.6	1.6	1.6	1.2	1.3
Cash	-	-	-	-	-	-	-	-	-	-	-	-	(322)	(310)	(2212)	(957)	(579)	(351)

NOTE CASH DEFICITS SHOWN ( )

EXHIBIT A

ACRES

MAY 18 1987

ACRES AMERICAN INCORPORATED
BUFFALO N.Y.

ALASKA POWER AUTHORITY — SUSITNA HYDROELECTRIC AUTHORITY — P5700 11

COMPARISON WITH CAPITAL COST $5,299M ESC. FROM 1982 AT 7%-STATE CONTRIBUTION $2.0bn

ENTRY PRICE - MILLS/KWh 120+7%pa

YEAR	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
REVENUE $m	423	485	557	1076	1151	1318	490	592	717	1469	1616	1956	524	658	796	1632	1796	2193
-10% DSCR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BASE CAP COST $5299m DSCR	2·2	2·1	2·1	1·8	1·3	1·3	2·3	2·3	2·5	2·4	1·8	1·8	2·4	2·5	2·6	2·6	1·9	1·9
Cash	(141)	(138)	(1509)	(708)	(485)	(454)	(70)	(5)	(1289)	(215)	152	1008	(11)	-	(1120)	16	563	1568
+10% DSCR	-	-	-	-	-	-	2·0	1·9	2·0	1·9	1·5	1·6	-	-	-	-	-	-
Cash	-	-	-	-	-	-	(184)	(149)	(1107)	(528)	(182)	107	-	-	-	-	-	-
+20% DSCR	-	-	-	-	-	-	1·7	1·6	1·6	1·6	1·2	1·3	-	-	-	-	-	-
Cash	-	-	-	-	-	-	(299)	(292)	(1926)	(842)	(516)	(312)	-	-	-	-	-	-
+30% DSCR	-	-	-	-	-	-	-	-	-	-	-	-	1·6	1·5	1·5	1·5	1·2	1·3
Cash	-	-	-	-	-	-	-	-	-	-	-	-	(354)	(350)	(2123)	(926)	(571)	(341)

NOTE CASH DEFICITS SHOWN ( )

ACRES AMERICAN INCORPORATED
BUFFALO NY

EXHIBIT C

ACRES

NOV 18 1981

ALASKA POWER AUTHORITY — SUSITNA HYDROELECTRIC PROJECT — P5700.11

COMPARISON WITH CAPITAL COST ESC. FROM 1982 AT 7% - STATE CONTRIBUTION $2.5Bn

$3,276M

ENTRY PRICE-MILLS/KWH	120+7%p.a						135+10%p.a						150+10%p.a					
YEAR:	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003	1994	1996	1998	2000	2001	2003
DSC	2.3	1.6	1.6	1.6	1.6	1.7	1.8	1.6	1.6	1.6	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.7
Cash	(176)	(184)	(52)	(57)	(22)	76	(337)	(342)	(194)	(170)	(67)	119	(393)	(401)	(252)	(233)	(169)	72
BASE Cap cost $3,276M		+10%						+30%						+40%				

NOTE CASH DEFICITS SHOWN ( )

EXHIBIT B

ACRES AMERICAN INCORPORATED
BUFFALO N.Y

NOV 18 1981

ACRES

M+

ACRES BUF

ACRES TOR

NOV 10/81 P5700.07.11

Out
Nov 10/81

ATTN: JOHN LAWRENCE

RE: SUSITNA HYDROELECTRIC PROJECT
TASK 11 FINANCING ANALYSIS

(A) FOLLOWING OUR MEETINGS WITH TERRY MCGUIRE AND JOHN RABEN ON OCTOBER 13TH THE FOLLOWING FINANCIAL PARAMETERS WERE ESTABLISHED FOR FURTHER ANALYSIS:-

	LOW	MEDIUM	HIGH
(A) O/O FUNDING OF TOTAL PROJECT COST FROM STATE OF ALASKA	30	45	60
(B) O/O ROI ON STATE FUNDS (EMPLOYED FOR TEST OF FINANCIAL VIABILITY ONLY)	5	5	5
(C) O/O INTEREST RATE ON SENIOR DEBT	10		14
(D) SENIOR DEBT MATURITY WITH INTEREST AND PRINCIPAL PAYMENTS LEVELISED OVER PERIOD COMMENCING ONE YEAR FOLLOWING THE YEAR OF FULL PLANT OPERATION		30 YEARS	

(E) INTEREST ON DEBT ADVANCED FUNDS DURING CONTRIBUTION TO BE CAPITALISED TO 1 YEAR AFTER FULL OPERATION OF EACH PROJECT SEGMENT

(F) DEBT SERVICE COVER TO BE MAINTAINED AT 1.25 TIMES INITIALLY RISING TO 1.5 TIMES THE ANNUAL REQUIREMENT FOR LEVELISED SENIOR DEBT SERVICE

(G) FUND FOR REPLACEMENT AND REVENUES ACCUMULATED AT A RATE OF 3/4 0/0 OF ORIGINAL CAPITAL COST WITH ALLOWANCE FOR INFLATION

(H) INFLATION RATE APPLIED TO CONTRIBUTION COSTS DURING CONSTRUCTION 10 0/0 PER ADDUM

(I) INFLATION RATE APPLIED TO OPERATING COSTS 8 0/0

NOTE ITEMS (A) - (G) AS DISCUSSED, FOLLOWING ITEMS DETERMINED SUBSEQUENTLY AS:-

(J) FUND FOR RESERVES AND CONTINGENCIES ACCUMULATED AT A RATE OF 400 0/0 OF OPERATING COST AND EMPLOYED YEAR BY YEAR TO PROVIDE FUND (G)

(K) COMMITTMENT AND PLACEMENT FEES RECOGNISED AS FINANCING COSTS AT LEVELS YET TO BE DECIDED

(L) WORKING CAPITAL TREATED AS CAPITAL OUTLAY FUNDED WITH PROJECT

(M) REVENUE ASSESS ON ONLY FIRM ENERGY OUTPUT

0 0 2 5 0

(B) APA LETTER OF OCTOBER 29TH PLACES NEW EMPHASIS ON INPUTS FROM OGP-5 ANALYSIS AND FROM TASK 11 - FEZIBL. IT APPEARS TO ASK US TWO SEPARATE SETS OF QUESTIONS WHICH THEY MAY NOT HAVE CLEARLY IN THEIR OWN MINDS. (1) THE FIRST SET OF QUESTIONS IS ABOUT COST BENEFIT ANALYSIS INTERPRETATION OF OGP-5. THEY MAY HAVE IN MIND THAT OGP-5 TAKES NO ACCOUNT OF LONG RUN SECURITY, CONSERVATION ISSUES ETC., AND THAT THE ''STATE IS LOOKING FOR THE LOWEST COST LONG TERM ALTERNATIVE'' IN THIS SENSE. THE STATE CONTRIBUTION CAN THEN BE SEEN AS PUTTING A VALUE ON THESE INTANGIBLE BENEFITS AND THE APA WANTS US TO TEST OGP-5 INTERPRETATING ITS RESULTS AS ''THE SENSIVITIVITY OF OPTIMUM SCHEDULING'' WHEN THE COST OFFSET REPRESENTED BY THIS EVALUATION OF THE INTANGIBLE BENEFITS OF SUSITNA I.E. 45 0/0 EQUITY ARE TAKEN INTO ACCOUNT AS A REDUCTION IN SUSITNA CAPITAL COST. IT SHOULD BE NOTED THAT THIS CONTRIBUTION DOES ''NOT'' ATTRACT INTEREST OR CHARGE. THE 5 0/0 RETURN ON INVESTMENT IS A TEST TO BE APPLIED WHEN FINANCIAL OUTCOME OF PROJECT HAS BEEN DETERMINED. (2) THE OTHER ''OPTIMUM SCHEDULING'' QUESTIONS THEY MAY HAVE IN MIND RELATE TO THE OPTIMAL FINANCIAL SCHEDULING

THAT IS WHEN AND TO WHAT EXTENT WOULD IT BE FEASIBLE TO FINANCE THE REMAINING PROJECT REQUIREMENTS BY DEBT, GIVEN THE ASSUMPTIONS THEY STATE. WE ARE IN A POSITION TO GO AHEAD WITH ANSWERING THIS LAST QUESTION FROM OUTPUT OF FEZIBL UNDER TASK 11.

IF YOU ARE HAPPY ABOUT THIS INTERPRETATION OF THE LETTER WE WILL GO AHEAD WITH THE FINANCIAL SCHEDULING PART IT AS PART OF TASK 11. IF ON THE OTHER HAND YOU HAVE ANY DOUBTS WHAT IT IS THEY WANT PERHAPS YOU SHOULD CHECK WITH R. MOHN AND THEN LET US KNOW WHAT IT IS YOU WOULD LIKE DONE.

J.G. WARNOCK

TORONTO

ACRES BUF

ACRES TOR

November 9, 1981

To: J. G. Warnock

From: A. J. Merrett

Re: ENTRY PRICE AND OUTCOME MATRICES

The task outline to the APA should refer to "outcome" matrices which, for the financial analysis, would be capital cost, entry price and earnings cover (CEE)where the outcome would be the earnings cover resulting from the first two mentioned variables. In the case of the risk analysis the matrix would be the event, provision risk (EPR) matrix where the outcome would be the residual risk remaining to the bond holders, upon from the events specified and mitigate given the provisions taken to measure the adverse consequences of these events in terms of risk to the bond holders.

On a related point, it would help if we could formalise now the terminology and range of results for the entry price. My suggestion is that we call the lower number "current avoidable cost". We should also, however, take cognisance of a possibly substantially higher number "long run avoidable cost" the latter would be what it would be "fair" for the utilities and their ultimate consumers to be prepared to pay. This would be not merely the operating cost savings which Susitna offers the utilities, but also, for the increased capital costs that would have been incurred to replace or expand existing capacity, if Susitna had not come along. If the whole system were under the control of APA it is this latter price which they might be expected to get in any "fair" regulatory hearing or political situation. We might get a fix on this long run avoidable cost by estimating what price hike does OGP-5 suggest that Alaskan consumers would have faced if Susitna did not go ahead and instead the next best option had been pursued. The "long run avoidable cost" then might be what this option would have resulted in 1993 costs, and in a "fair" world Susitna could charge whatever would bring the utilities costs up to this level.

It would be worth getting the people producing OGP-5 to check out this and the estimate of the current avoidable cost entry price since both are likely to become quite hotly contested numbers. My own guess is that if OGP-5 is operating correctly, there may be little difference between the two entry prices. This is because, presumably, OGP-5 will select for the system in the run-up to Susitna high current costs "make do and mend" solutions rather than lower costs long term investment solutions, since the latter would be relegated to a standby role once Susitna came along. However, these are facts which we should have at our finger tips.

AJM:dn

FOR THE ATTENTION OF JG WARNOCK

BT

FOR REVIEW IN CONJUCTION WITH MOHN' LETTER DATED OCT 29 AND COORDINATION WITH CURRENT BUFFALO ENERGY COST ASSESSMENTS BEFORE TRANSMITTAL

ACRES BUF

11/9/81

TLX TO COLUMBIA ATTN: C. DEBELIUS & P. HOOVER

FROM: J.D. LAWRENCE - BUFFALO

SUSITNA

TASK 11

FINANCING AND MARKETING

COPY TO : J.G. WARNOCK/TORONTO

BT

FOLLOWING DISCUSSION WITH T. MCGUIRE AND R. MOHN AT BUFFALO MEETINGS 13TH OCTOBER WE HAVE REVIEWED LIKELY OUTCOME OF STATE LEGISLATURE APPROVAL APPROACH AND IMPACT OF MOST PROABLE CAPITAL COST ON SUSITNA ENERGY PRICING. TASK 11 CAN BE RESCOPED WITHIN REMAINING BUDGET ALLOTMENT TO INCLUDE FINANCIAL ANALYSES. MARKET ASSESSMENT AND RISK ANALYSES. IN VIEW URGENT NECESSITY TO INITIATE WORK AND MEET MID JANUARY SCHEDULE WOULD RECOMMENDED TELEXING APA AS FOLLOWS: QUOTE

FOLLOWING DISCUSSIONS RELATING TO MOST LIKELY RANGE OF FUNDING FOR SUSITNA FROM STATE OF ALASKA AND YOUR INSTRUCTION LIMIT OUT FURTHER WORK ON TASK 11 TO FIRSTLY FINANCIAL ANALYSES SECONDLY MARKETING ASSESSMENT AND THIRDLY RISK ANALYSES. WE HAVE RESCOPED TASK 11 BY ELIMINATING FUTURE EFFORT ON PROJECT OVERVIEW AND INTERNAL REPORTS AND APPLYING LEVEL OF EFFORT EQUIVALENT TO REMAINING FUNDS BUDGETED FOR TASK 11 TO WORK ITEMS AS ABOVE. BRIEF SUBTASK DESCRIPTION FOLLOW - FINANCIAL ANALYSES OBJECTIVE UPDATE AND REVISE FINANCING PLAN TO INCORPORAT LEGISLATIVE PROVISIONS SB25 AND RANGE OF LIKELY OUTCOME. METHODOLOGY IDENTIFY BASIC FINANCING OPTIONS AND APPLY COMPUTER PROGRAMED ANALYSIS FEZIBLE TO GENERATE ALL RELEVANT AND REQUIRED ACCOUNTING AND FINANCING DATA OBVER PROJECT LIFE.
SCHEDULE- BEGINNING NOVEMBER 9 TEST COMPUTER ANALYSIS AND ASCERTIAN THAT OUTPUTS CONFIRM TO REQUIRED ACCOUNTING PRACTICES TO SERVE NEEDS OF APA. FERC. FIRST BOSTON AND OTHER PARTIES. CONDUCT ANALYSES WITH MOST RECENTLY AVAILABLE COST. SCHEDULE.

ACRES TOR

IS SOMEONE THERE HELLO

ERGY OUTPUT INFORMATION AND AGREED FINANCIAL PARAMETERS AND RANGES OF VALUES. PRESENT RESULTS IN MATRIX FORM TO DEMONSTRATE IMPACT OF SUCH VARIABLES AS STATE FINANCIAL CONTRIBUTION.M INTEREST RATES ON SENIORSENIOR DEBT CAPITAL COST. SCHEDULE OF ENERGY DELIVERIES ETC. PROVIDE FOR INTERACTION WITH APA. FIRST BOSTON TO ALLOW REFINEMENT OF ANALYSES AND OUTPUT TO PROVIDE FOR FINAL OUTPUTS IN SUITABLE FORM FOR FEASIBILITY REPORT. LICENSE APPLICATION AND FINANCING CONSIDERATIONS IN MID JANUARY 1982 IN PARALLEL WITH FOREGOING IDENTIFY PRIN-

FOR FEASIBILITY REPORT. LICENSE APPLICATION AND FINANCING CONSIDERATIONS IN MID JANUARY 1982 IN PARALLEL WITH FOREGOING IDENTIFY PRINCIPAL FINANCING RISKS WITHIN RANGE OF ALTERNATIVE PROTECT OUTCOMES AND DETERMINE IMPACT AND PROBABILITY IN COORDINATION WITH RISK ANALYSES SUBTASK BELOW.

MANHOURS 1192.

SCHEDULE NOV 9. 1981 TO JAN 15. 1982 AND AS REQUIRED TO COMPLETION OF LICENSE APPLICATION

COMPUTER EXPENSE 07500

CONSULTANTS 68 MAN DAYS

MARKETING ASSESSMENT

OBJECTIVE ASSESS LIKELY MARKET RESPONSE TO AVAILABLE OUTPUT FROM SUSITNA AND DETERMIN PATTERN OF WHOLESALE PRICING LIKELY TO BE ACCEPTABLE TOGETHER WITH RESULTING REVENUE.

METHODOLOGY IDENTIFY ELEMENTS OF RAILBELT MARKET TO BE SERVED BY SUSITNA AND DETERMIN LIKELY PROGRAM AND PRICE AT WHICH AVAILABLE ENERGY/POWER WOULD BE ABSORBED INVOLVES ANALYSIS OF UTILITY DEMAND PROFILES AND DEVELOPING CHARACTERISTICS WITH TIME AS INDICATED BY OGP-5 AND OTHER STUDIES INCLUDING ANCHORAGE-FAIRBANKS INERTIE. DETERMIN LIKELY ACCEPTABLE BASIS UNDER WHICH UTILITIES WOULD CONTRACT FOR WHOLESALE SUPPLY.

SCHEDULE BEGINNING NOVEMBER 16 REVIEW AND ANALYSE ALL AVAILABLE DATA RELATING TO RAILBELT UTILITIES AND IN EARLY DECEMBER PROVIDE APA WITH DRAFT OF INTIAL APPRAISAL OF MARKETING PLAN. REVISE AND RESTRUCTURE AS NECESSARY DURING DECEMBER AND COMPLETE REQUIRED PORTION OF REPORT INPUT BY JANUARY 15. 1982.

MANHOURS 951

SCHEDULE NOV1. 1981 TO JAN 15. 1982 AND AS REQUIRED TO COMPLETION OF LICENSE APPLICATION

COMPUTER EXPENSE 01500

CONSULTANTS 12 MAN DAYS

RISK ANALYSES TO BE PROVIDED IN SIMLAR FORM TO ABOVE C.A. DEBELIUS NOTING THAT FINANCING RISK MANHOURS INCLUDED IN FINANCIAL ANALYSIS LEVEL OF EFFORT. QUOTE WE WOULD APPRECIATE TELEX FROM APA RELEASING US TO SUPPLY FULL EFFORT TO TASK 11 IMMEDIATELY. ANALYSIS WILL REQUIRE CAPITAL COST AND ENERGY INPUTS FROM TASK 4 EARLY IN WEEK OF NOVEMBER 9.

REGARDS

J.D. LAWRENCE

ACRES TOR

ACRES BUF

NOV 05 1981

RECORD OF TELEPHONE CALL

JOB NO. P5700.00 FROM (Originator) CAD

DATE Oct 30 81 Company AAI

FILE NO. P5700.07.11 TO Gordon Hime

Company COOPERS LIBRAND (CPA FIRM)

SUBJECT Task II Accounting formats for FERC.

Per suggestion of JGW, I called G. Hime for possible assistance ~~[illegible]~~ in structuring financial analysis computer program to conform to FERC accounts.

G. Hime retired from FPC ~10 years ago. J. Stout (former FPC chief of licensed projects) also is with Cooper Lybrand. They will be pleased to provide consulting services.

I advised G. Hime I would call him next week to arrange a meeting when JGW is also available.

CAD

CIRCULATE TO:

JGW
JDL

fee APA concern JGW

ALASKA POWER AUTHORITY

4 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

October 29, 1981

RECEIVED
NOV 6 1981
ACRES AMERICAN INCORPORATED

Mr. John D. Lawrence
Acres American
Liberty Bank Building
Main at Court
Buffalo, New York 14202

Dear John:

ALASKA POWER AUTHORITY
SUSITNA
FILE P5700
. 11
SEQUENCE NO.
F 2082

	INFORM.	DISTRIB.	INITIAL
		CW	
XC		CAD	
XC		JDG	
		JMH	
		JPS	
		PGH	
		RNS	
XC		SNT	
		DWL	
		MRV	
		HRC	
XC		JGW	
XC		SDiner	
		FILE	

You will remember that, at the recent Buffalo meetings, there was discussion about input parameters for generation planning. Phil Hoover expressed reservations about using economic parameters to optimize the schedule of Susitna additions, because he believed that the amount of existing gas turbine generation being displaced was excessive. We tentatively agreed to use a marketability test based on financial parameters to schedule the Susitna development, while continuing to use the economic parameters in the economic evaluation.

I have discussed the matter with Eric at some length, and he does not share Phil's concern. Eric believes that we should stick with the economic parameters throughout, because the State is looking for the lowest cost long term alternative. There is no doubt that there would be marketing problems in the early years if we had no latitude in establishing rates. However, that is not the case. We recognize the likelihood that rates may have to be adjusted in the early years through State contributions in order to make Susitna power attractive. We believe this will be well worth it in the long run, however, if it is the price for bringing on line the most economical long term alternative.

Therefore, after due consideration of the arguments your staff has presented to date, we wish you to continue using the economic parameters in all aspects of the economic feasibility evaluation. For information purposes only, please explore the sensitivity of optimum scheduling to a set of financial parameters listed below. The results of this check are for our in-house use.

Percent Equity	45%	
Return on Equity		5%
Percent Debt	55%	
Cost of Borrowing		12%
Period of Loan		35 years
Underlying Inflation Rate	7%	

Leaving that subject, we agreed in Buffalo that a formal and comprehensive sensitivity analysis will be performed to determine the sensitivity of net benefits to possible variation in the input assumptions. Net benefits are the difference between total discounted

0025

costs of the with-Susitna plan and those of the without-Susitna plan from 1983 to the end of the economic evaluation period. The sensitivity analysis will address several primary sets of assumptions:

a) Susitna costs and schedule
b) Non-Susitna alternative costs and schedules
c) Economic analysis parameters
d) Load forecasts

The sensitivity analysis should include the following aspects:

a) Identify all assumptions.
b) For each assumption, identify the reasonable range of variability.
c) Test (or otherwise determine) the sensitivity of the economic analysis results to change in each assumption over its range of variability.
d) Identify and discuss the "important" assumptions, i.e., those to which the results are sensitive.

The source of data for exploring the assumptions underlying the Susitna Project will be the separate risk analysis. Battelle information should be the main source of data for exploring assumptions dealing with load forecasts, alternative project capital costs and fuel costs.

A flow diagram of the type I provided you in Buffalo may be a useful tool for the identification of assumptions and the presentation of the analysis results. For instance, you might show a diagram of all assumptions and then the same diagram with the "important" assumptions highlighted.

Both the risk analysis and the sensitivity analysis will be presented as an appendix, with summary results presented as appropriate in the main report and in the executive summary/project overview.

Please advise if anything in this letter conflicts with your recollection of our discussion.

Sincerely,

Robert A. Mohn
Director of Engineering

RAM/blm

cc: Phil Hoover, Acres, Columbia, Maryland
Jay Jacobson, Battelle, Richalnd, Washington

SENSITIVITY ANALYSIS

APPLIANCE SATURATION RATES
TURNOVER OF HOUSING STOCK
ETC.

→ RESIDENTIAL
→ COMMERCIAL
→ INDUSTRIAL
ETC.

→ PER CAPITA USE

ECONOMIC ACTIVITY
STATE SPENDING

→ LOAD FORECASTS

ANALYSIS PERIOD
DISCOUNT RATE

→ ECONOMIC ANALYSIS PARAMETERS

1982 COST
FUEL CHARACT
ESC. RATE

→ FUEL COST

CONST PERIOD
O+M COSTS

→ COST OF COAL-FIRED GENERATION

LOCATION
LOWER 48 COSTS
ENV. PROTECTION
AK. FACTOR

→ CAPITAL COSTS

? COST OF GAS-FIRED GENERATION

FORMAL RISK ANALYSIS
(DON'T FORGET TRANSMISSION)

⇒ O+M COSTS
⇒ CONST PERIOD
⇒ CAPITAL COST

→ SUSITNA GENERATION COSTS

→ PRESENT WORTH COSTS

R. M.

0 0 2 5 0 0

FINANCIAL ANALYSIS-SCOPE OF WORK

1. With new estimates for:-
   1.1 Capital costs
   1.2 Operating costs
   1.3 Repairs and renewals
   1.4 Energy output
   1.5 Working capital requirements

   Determine prices required to fulfil basic economic criteria ignoring sources of financing.
Possibly for a range of economic criteria
e.g. Real return 3% after 25yrs,30yrs and 40yrs.
Money return 10%/14% after 30yrs.
Certainly for a range of price patterns.
e.g. revenue increase=increase in operating costs
total price increases at inflation rate of 6%
~~price increases every 5yrs.(or 10yrs.)~~

2. Adjust model logic to allow for minimum cash balances in the form of "Funds" which can earn interest.
   2.1 Reserve and Contingency Fund
   = next years renewals and replacements
   + next years operating costs
   + ?
   2.2 Debt Service Reserve Fund
   = 1.25 (?) times next years debt service

The basic principle of these Funds is to ensure that sufficient cash exists to meet obligations for ,say, 1 year ahead if revenue is cut off or erratic.

(QUESTION-If revenue is inadequate because of known low energy periods can the fund value dip or must external cash be injected ?)

3. Adjust the model logic to allow for bond discount or placement fees.i.e.costs which are proportional to debt drawdowns.

4. Adjust the model logic to allow for drawdown of debt and State(or Power Development Fund) contributions in a range of relative proportions.
e.g. Each stage of the Project (Watana 1,Watana 2,Devils Canyon) could be financed in a different manner.

SCOPE OF WORK (Contd)

4. (contd)
A standard approach would be to divide each project stage into a number of financing phases- hopefully a maximum of 3.
Phase 1 would be all equity.
Phase 2 would be debt and equity in one ratio (perhaps all debt)
Phase 3 would be debt and equity in another ratio
The pro-rata rates in each Phase would be different ~~in each Phase~~ and all but the last Phase would be limited or ended in one of three ways.

(i) By time e.g. after 'n' years.
(ii) By amount e.g. when equity has reached $x million.
(iii) By acieving a certain cumulative debt:equity ratio.

It is desirable to keep the drawdown pattern as flexible as possible, so this task would be an ongoing activity greatly influenced by the numerical results from each set of data.

(QUESTION-To what extent can revenue from early stages of the project be used towards financing the later stages and how will it fit into the debt:equity ratios?)

5. Design a set of printout tables to fulfil a variety of requirements.a different selection of tables from the set would be appropriate in different circumstances and there may be several versions of some of the tables.Examples of tables to be included are as follows:-

5.1 Standard "business type" financial statements (similar to those shown in the prospectuses for Colorado and Washington bonds).

5.2 Cash flow summary showing the allocation of annual revenue.

5.3 Summary statements for checking purposes.

5.4 Supporting miscellaneous information Grouped in several ways.e.g cash flow components per kwh.

5.5 A one or two page introductory sheet identifying major data input assumptions.

6.0 Run financial projections for various cases.

6.1 Based on criteria and parameters initially specified.

6.2 Based on revised criteria and parameters after consideration of results of 6.1.

COMMENTS

Item 1. This is essentially a repetition of the last exercise in February during Tony Merrett's visit.

Item 2. As with most other financial simulation computer program systems MPSF provides for all calculations to be completed in each period before going on to the next period. Thus it is difficult to program decisions in this period based on the results of calculations in the next period. However it is possible as long as the calculations are not too complicated. Some method must be found to achieve the desired level of "Funds" based on this periods information and next years data input.

Item 3. FEZIBL will either allocate interest during construction on any loan to a specified cost category or pro-rate it among all cost categories. If this latter option is used it would be difficult to stop an allocation to the "bond discount" account.

Item 4. FEZIBL normally calculates interest based on the balance of debt outstanding at the end of the previous period. Therefore when working on an annual basis it cannot simulate quarterly drawdowns- although it can allow for quarterly (or semi-annual) repayments if they are in a regular pattern. For a project of this size all calculations during the construction period might be better on a quarterly basis.

Item 5. This task will require a lot of input from others. It is usually more satisfactory to comment on example formats when they include figures so that it is clear how the various items relate to one another.

GENERAL The present Susitna model makes extensive use of FEZIBL routines and the MPSF consolidation feature with only short and simple "customised" supplementary logic which overwrite or extend the FEZIBL calculations. The adjustments described in 2,3 and 4 will lengthen the "customised" logic but are not particularly difficult. Most of the other criteria changes can be handled simply by amending data values. Therefore the present model together with the adjustments should be adequate for the next stage of financial analysis.

As the financing scenarios become more complex it would be necessary to develop a fully "customised" program using FEZIBL as a starting point. Such a program will certainly be necessary once debt arrangement details start to be seriously considered, and changes to it will be an ongoing activity as new ideas develop.

Features which cannot be handled efficiently by FEZIBL include:-

(a) This year decisions based on complex next year calculations.

(b) Complex interrelationships between construction period finance and operating revenues during the period.

COMMENTS

GENERAL (contd.)

(c) "Circulating" Funds with "spill-overs" into others.

(d) Complex debt repayment terms with prepayments based on operating results.

(e) Annual revenue based on much calculation.

J. G. Warnock

SUSITNA HYDROELECTRIC PROJECT
Minutes of Meeting to Discuss Task 11 Issues
October 13, 1981

P5700.13
P5700.14.11

Attendees: J. D. Lawrence
J. G. Warnock
C. A. Debelius
R. A. Mohn (APA)
T. McQuire (APA)
J. Raben (First Boston)
J. Hayden, M. Vanderburgh (for portions of the meeting)

1. Finance Status. T. McQuire reviewed the status of State plans for participating in financing the Susitna Project. He stated that there is less optimism within the State with respect to future revenues than there has been in the past. It is likely that on the order of two to three billion dollars in 1981 terms will ultimately be made available. This corresponds to a 40-50 percent equity. The approach will assist in resolution of the tax exempt problem. It is likely that arrangements will be made on a take-or-pay basis with municipals at 35 percent and then divide the remaining bond issues amongst other utilities.

2. Risk Analysis. C. Debelius made a brief presentation on the proposed Susitna Risk Analysis. R. Mohn suggested that in addition to the Susitna specific risk analysis which we propose to do, there are several other risk areas that need somehow to be considered. These include risks or sensitivity dealing with the alternative to the Susitna Project, with the economic parameters, and with the validity of the forecasts that are being used. In effect, R. Mohn suggests that a careful sensitivity analysis must be done on all of these issues. (See also the final paragraph in this memorandum for further discussions of sensitivity analysis which occurred in the afternoon session.)

3. Financial Analysis. T. McQuire suggested that it would be interesting if it is possible to produce a three-dimensional plot which relates interest rates, rates of return to the State, and percent equity contribution by the State. J. Warnock noted that there may be a fourth dimension which has to do with the variability of capital costs themselves.

T. McQuire noted that there is a great sensitivity to terminology. He prefers that we avoid words like "tax", "royalty", and "depreciation". It's probably better to speak in terms of "return". Insofar as a State completion guarantee is concerned, T. McQuire observed that it is probably unlikely. Even so, there will be a guarantee by APA.

T. McQuire addressed the present concept for APA rates. He believes there will be a single system rate determined by the cost of operations and maintenance and debt services. However, it is possible that the next legislative session will revise this formula to include a return (perhaps 5 percent) on State investments.

J. Warnock plotted a spectrum of potential equity positions for the State, and it was agreed that the most likely equity position for the State will be about 50 percent with no completion guarantee and with on the order of 5 percent return on investment.

4. Response to Task 11 Questions. J. Warnock had sent a series of questions regarding Task 11 issues to the Power Authority during the month of September. Unfortunately these had apparently not been received. Each of the questions was addressed at the meeting as follows:

   a. Question: Should Task 11 scope be modified to eliminate financial analysis based on State appropriation approach to finance Susitna?

      Answer: State will not fund the whole project. Perhaps only 50 percent equity will be provided. Therefore, financial analysis should not be eliminated from the Task 11 program.

   b. Question: Should Task 11 financial analysis include part State-part institutional considerations, potentially with tax exempt bonds?

      Answer: Yes.

   c. Question: Is further project overview required along the lines of earlier ones or is an executive summary of the feasibility report sufficient for the purpose?

      Answer: A number of documents will be needed to satisfy the requirements of the decision-makers. These include the feasibility report, the Susitna risk analysis, sensitivity analysis which R. Mohn had earlier mentioned, and the financing risk anaylsis.

      T. McQuire said that he sees the feasibility report would include risk sensitivity reports as appendices. The executive summary would brief the feasibility report, concentrating on important issues including financial ones. Major issues include such things as environmental, seismic, costs, financing, etc.

      Some discussion ensued on things that might be highlighted in the executive summary of the feasibility report. R. Mohn suggested the following:

      - Description of project with good drawing. (What, Why, What plan)
      - The Railbelt system.
      - Implications of a large project with a small system.
      - Capital costs and schedule.
      - Assessment of risks and how they will be dealt with.

- How the power and energy will be marketed. (It was pointed out that this is a delicate issue and it must be handled with care. Basically, it will be necessary to indicate how APA and the State will market Susitna energy.)

- Benefit/cost picture.

- Environmental issues including downstream fisheries.

- PA statement of how the project will be operated in the sense of whether there will be a resident community or some form of central control.

- Conclusions with respect to capacity and energy costs, schedule, financing and so forth.

T. McQuire noted that in spite of the many things that must be included it will be necessary to make the executive summary brief. J. Warnock cited the Churchhill Falls experience which included approximately 22 pages. It was agreed that this will be a reasonable length for the executive summary of the feasibility report.

T. McQuire noted that the executive summary will be needed for the decision-making process in the spring. R. Mohn reviewed what he sees as the sequence of events. The draft feasibility report will be widely distributed on March 15 and it will be out for comment. It will be reviewed by the Review Panel and will also be subject to public comment. A decision will be made by the APA Board at the end of April. Following the APA Board decision, a letter will be addressed to the Governor with recommendations and asserting that the final report will be published by the end of May.

There was some discussion as to whether a technical executive summary could also reasonably serve as one that meets the needs of the public or of the financial community. T. McQuire suggested that no special documentation for the financing community is really needed at this stage. In short, APA wants a good executive summary of the feasibility report.

d. Question: Will APA provide a statement of the financial ability of the applicant and an explanation of the proposed method of financing or will Acres have to do so?

Answer: Acres will not be required to research and prepare statements regarding the financial ability of the applicant. APA will provide these. Even so, there is a significant amount of effort required of Acres to satisfactorily address the requirements of FERC for the financing section of the licensing application.

In short, APA will provide a summary regarding financial ability and explaining certain proposed methods of financing. Acres will prepare the exhibit and request whatever information is necessary from APA.

e. Question: Should Task 11 involve the same degree of analysis of utility profile and energy/capacity needs following on to the recommendations as to pricing philosophies which could form the basis for power contract negotiation?

Answer: The current system calls for the return to be operation and maintenance costs, and debt services. Even so it could be modified to get a 5 percent return on investment. The State will be a wholesaler of power; utilities will be expected to handle reserve requirements.

In short, there is no need to change from the current Task 11 plan on this issue. APA desires Acres recommendations on pricing policies. It was suggested by T. McQuire that work done by Gilbert Commonwealth for the intertie may be useful. R. Mohn also suggested Battelle's work could assist. Finally, it was noted that the Alaska Power Administration has done a power and marketing analysis for Bradley Lake which should be obtained and reviewed.

f. Question: Is it still necessary to conduct a risk analysis with possibly some reduction in analysis of risk of default in providing revenue assurance?

Answer: Risk analysis should be accomplished at the indicated level, basically along the lines suggested by C. Debelius in the earlier presentation. T. McQuire reiterated the fact that the State will probably not guarantee completion. J. Raben indicated that the investor will not bear the risk of umcompleted construction. He will want reasonable assurance of completion. J. Raben also noted that it will not be possible to wait until the State funds run out before APA goes to the market for bonds. Basically, he suggests that there is a risk that there will be bad market condition when bonds are sought and that, to the maximum extent possible, APA should allow itself some flexibility. Briefly stated, the State share is expected to be high in the early years and this will decline in later years as the bonds begin to assume more and more importance in terms of project funding.

5. Afternoon Meeting. In the afternoon two subgroups assembled to further discuss financing and marketing issues as well as the whole question of sensitivity analysis. The two papers attached are notes provided by R. Mohn regarding his thinking on sensitivity analysis.

R. Mohn suggests that each of various parameters should be varied at least one at a time and if possible interdependence should be considered. R. Mohn states that we should demonstrate that all assumptions and sensitivities were considered. It is not necessary to run the full computer model every time, but we must be at least able to show how we handled potential differences from original assumptions.

The group which had discussed financial issues returned to the meeting and indicated that it appears that a rate of about 8.85 percent

may be appropriate for financial analysis. Some discussion followed regarding the necessity for running the OGP Model using financial parameters. It was agreed that this sort of effort will be necessary. P. Hoover was tasked to provide recommended revisions to the scope of work.

It was further agreed that J. Warnock would prepare recommended changes to Task 11 scope stemming from the discussions which had transpired and that these would be furnished to the Power Authority at the earliest opportunity. It was also agreed that the risk analysis task should be started shortly after the first of November, since by that time revised cost estimates will have been under preparation by the Project Services Department.

6. Adjournment. The meeting adjourned at 5:00. J. Hayden and P. Hoover participated in some of the discussions in the afternoon session.

CAD:ls

Charles A. Debelius

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R.M.

SENSITIVITY ANALYSIS

1. IDENTIFY (LIST) ALL ASSUMPTIONS

2. FOR EACH ASSUMPTION, IDENTIFY THE RANGE OF VARIABILITY

3. TEST FOR SENSITIVITY OF EACH ASSUMPTION OVER ITS RANGE

4. IDENTIFY "IMPORTANT" ASSUMPTIONS

5. DISCUSS THE "IMPORTANT" ASSUMPTIONS AND SENSITIVITY OF RESULTS TO VARIABILITY IN THOSE ASSUMPTIONS.

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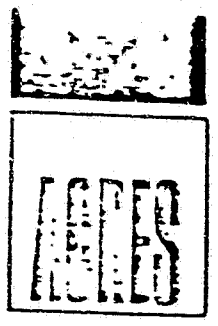

Please copy to
Terri with Attn
Correspondence

September 15, 1981
P5700.11
T.1148

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
333 West 4th Avenue
Suite 31
Anchorage, Alaska 99501

Attention: Mr. Terry McGuire

Dear Terry: Susitna Hydroelectric Project
Revised Task II Scope

In the process of rescoping Task 11 we have endeavored to assess the implications of the State of Alaska legislation, passed in August, on the work now required on marketing and finance. In order to assist us in reaching a Task 11 scope which meets the requirements of APA, FERC, the State and other parties of interest, we have set out six particular questions to which we would appreciate a response and/or comment. These questions together with a brief statement of the issues involved and a short discussion of the implication for Task 11 as planned, are set out in Attachment 1 to this letter.

Task 11 includes Subtasks 03, 04, 05 and 08 which involve analysis and assessment of risks to which the Susitna project may be exposed. The change in the approach to financing through State appropriation does not in our opinion reduce the need for analysis of all the risk involved. In fact the absence of the market test of a conventional financing approach makes it more imperative than ever that this should be carried out in a rigorous and comprehensive manner. The changes in scope we shall recommend for Task 11 will therefore transfer some of the emphasis on other aspects of marketing and finance issues to that of risk analysis, assessment and mitigation.

Question 3 addresses the need for a further Project Overview Report similar to the first issue made in March 1981. If this were to follow basically the context of the Feasibility Report, then it is suggested that an Executive Summary might possibly meet APA needs for a general overview of this work conducted throughout our assignment.

We would appreciate your thoughts on our suggested redirection of the

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building, Main at Court
Buffalo New York 14202

Telephone 716-853-7525 Telex 91-0423 ACRES BUF

Other Offices Columbia, MD Pittsburgh PA Raleigh NC Washington, DC

Task 11 effort. We would be pleased to discuss this matter in detail with you at an early meeting.

Sincerely,

John D. Lawrence
Project Manager

JGW/jmh

Attachment

Susitna Hydroelectric Project
Task 11 Marketing and Finance
Review of Scope - September 1981

Issue

The extent to which the State legislative appropriation of $5 billion now obviates need for those aspects of Task 11 dealing with financing feasibility.

Discussion

The original POS and definition of Task 11 was based on the likelihood that APA would finance Susitna with tax exempt revenue bonds. A major consideration at the outset was the question of IRS treatment under Section 103 I.R.C. The POS was drawn up on the assumption that, whether or not the tax exempt issue was resolved, a full financial analysis of the project would be required to demonstrate feasibility under expected market conditions.

Question

Should task 11 scope be now modified to eliminate financial analysis based on the proposed State of Alaska appropriation approach to financing of Susitna?

Issue

The need for back-up consideration of conventional financing approaches to ensure that the project receives the appropriate market test.

Discussion

Questions have been raised regarding the desirability of applying the market tests usually provided by the rigorous analysis and judgement of financing institutions to major capital projects. There may still be some benefit to the State of Alask from institutional investment finance of say 1/3 to ½ of a major project such as Susitna. If this remains a possibility then financial analysis on partial market financing may be worthwhile.

Question

Should Task 11 scope include financial analysis on the basis of part State-part institutional financing, potentially in a manner where tax exempt bonds could be applied?

Issue

If State financing is to be employed as the basis under which Susitna will most likely proceed, no need arises for bond financing documentation of the type foreseen when the POS was prepared.

As the Project Overview was envisaged as a document primarily for use by financial institutions, and as the basis for future bond support documentation, its format and content should now be reconsidered.

A single issue of a Project Overview was published in March 1981 in summary form. The plan is, at present, to prepare a second issue in early 1982.

Discussion

The Project Overview was originally structured as a document which could provide such entities as financial institutions, banks and other third parties with a comprehensive assessment of Susitna Hydroelectric Project. It was envisaged as the basis of later documentation necessary to support a bond offering which would require explicit definition of the project, its economic and financial feasibili its risks, the adequacy of contingencies provided and the level of confidence with which it was being presented.

Question

Is a further Project Overview in the prescribed form still required by APA or will an appropriately edited executive summary of the Feasibility Report suffice?

Issue

FERC license application requirements call for a statement of the financial ability of the applicant to carry out the project and an explanation of the proposed method of financing the construction.

Discussion

Exhibit requirements for the FERC application can probably be met by a precise outline of the financing plan now envisaged under State legislative appropriation. The approach now planned is, however fairly unique and may require a more detailed explanation than would be the case for a conventional financin method. With State backing assured there is no question of the financia ability of the applicant but the explanation of the proposed method requires particular consideration.

Question

Will APA be in a position to provide in full such explanation as is needed or will Acres be required to research and prepare?

Issue

It is our present understanding that there are certain power/energy marketing concepts implicit in the approach being taken with State legislative appropriation funding. Exhibits supporting the FERC license application are to include information on the proposed "interaction" of the power/energy deliveries from the project with the needs of the electric systems of others with which the project will eventually interconnect.

Description

A substantial portion of the "marketing" study effort was to be applied to review and analysis of the method which would be employed to fit Susitna energy and capacity output to the needs of the customer utilities in the Rail belt. This would be necessary to provide a basis of power contract negotiation which would recognize, among other things, any residual requirements for standby capacity from existing displaced generating plant. The pricing of Susitna output would be a major consideration under conventional financing approaches particularly in view of its impact on adequate interest cover and debt service, particularly during the early years of operation. The proposed State financing with a 5% return on "equity" introduces a markedly different set of circumstance

Question

Should Task 11 still involve the same degree of analysis of utility profile and energy/capacity need following on to recommendations as to pricing philosophies which could form the basis for power contract negotiation?

Issue

With the proposed mode of financing the State would appear to assume the role of completion guarantor. Overruns beyond the predicted overall project capital cost would be reflected in any basic requirements which may be imposed on the availability of additional "equity". The risk of this arising is still no doubt of vital interest to the State as it would have been to institutional investors.

Discussion

It is clear that the change in the basis of financing does not affect basically the risks to which the Project is exposed. Implicit in the new approach is the position of the State as the backer and, no doubt, the guarantor of project completion. It would appear then that while analysis of risks and exposures may not be essential to assure financing it will still be of significant interest to APA and the State.

Question

Is Acres correct in assuming that the full range of risk analyses proposed in the POS is still required with possibly some reduction in effort on analysis of risk of default in providing revenue assurance?

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TELECOPY TO J. D. LAWRENCE, York 11 BUFFALO

DRAFT

Mr. Eric P. Yould,
Executive Director,
Alaska Power Authority,
333 West 4th Avenue,
Suite 31,
Anchorage, Alaska. 99501.

September 11, 1981.

Revised attachment sent through inter-office mail Thursday 10th 1985 JDW

Attention: Mr. Terry McGuire

Dear Terry:

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Revised Task II Scope

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Task II includes Subtasks 03, 04, 05 and 08 which involve analysis and assessment of risks to which the Susitna project may be exposed. The change in the approach to financing through State appropriation, in our opinion, does not lessen the need for analysis of all the risk involved. In fact the absence of the market test of a conventional financing approach makes it more imperative than ever that this should be carried out in a rigorous and comprehensive manner. The changes in scope we shall recommend for Task II will therefore transfer some of the emphasis on other aspects of marketing and finance issues to that of risk analysis, assessment and mitigation.

Question 3 addresses the need for a further Project Overview Report of the nature of the first issue made in March 1981. If this were to follow basically the context of the Feasibility Report, then it is suggested than an Executive Summary might possibly meet APA needs for a general overview of the work conducted throughout our assignment. An alternative approach is, we feel, worthy of consideration. The action of the State of Alaska in providing appropriation of funds for energy projects improves the prospects for an early launch of Susitna if the decision to proceed with FERC licence application is taken and such licence is granted. The Project Overview might well then take the form of plan of implementations building from the position reached during the preparation of feasibility reports and of licence application to a comprehensive outline of the manner in which subsequent phases of work, including construction, should best proceed. The resulting Project Overview would then evolve from the style of a report on what had been done to that of a dynamic planning document for ongoing phases, organization and accomplishment.

At the time that you provide responses to the particular questions on Task II we would appreciate your thoughts on our suggested redirection of the project overview effort. We would be pleased to discuss this matter in detail with you at an early meeting.

Sincerely,

John D. Lawrence,
Project Manager

Susitna Hydroelectric Project
Task 11 Marketing and Finance
Review of Scope - September 1981

Issue

The extent to which the State legislative appropriation of $5 billion now obviates need for those aspects of Task 11 dealing with financing feasibility.

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If State financing is to be employed as the basis under which Susitna will most likely proceed, no need arises for bond financing documentation of the type foreseen when the POS was prepared.

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The Project Overview was originally structured as a document which could provide such entities as financial institutions, banks and other third parties with a comprehensive assessment of Susitna Hydroelectric Project. It was envisaged as the basis of later documentation necessary to support a bond offering which would require explicit definition of the project, its economic and financial feasibility, its risks, the adequacy of contingencies provided and the level of confidence with which it was being presented.

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Question

Will APA be in a position to provide in full such explanation as is needed or will Acres be required to research and prepare?

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A substantial portion of the "marketing" study effort was to be applied to review and analysis of the method which would be employed to fit Susitna energy and capacity output to the needs of the customer utilities in the Rail belt. This would be necessary to provide a basis of power contract negotiation which would recognize, among other things, any residual requirements for standby capacity from existing displaced generating plant. The pricing of Susitna output would be a major consideration under conventional financing approaches particularly in view of its impact on adequate interest cover and debt service, particularly during the early years of operation. The proposed State financing with a 5% return on "equity" introduces a markedly different set of circumstances.

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Should Task 11 still involve the same degree of analysis of utility profile and energy/capacity need following on to recommendations as to pricing philosophies which could form the basis for power contract negotiation?

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With the proposed mode of financing the State would appear to assume the role of completion guarantor. Overruns beyond the predicted overall project capital cost would be reflected in any basic requirements which may be imposed on the availability of additional "equity". The risk of this arising is still no doubt of vital interest to the State as it would have been to institutional investors.

Discussion

It is clear that the change in the basis of financing does not affect basically the risks to which the Project is exposed. Implicit in the new approach is the position of the State as the backer and, no doubt, the guarantor of project completion. It would appear then that while analysis of risks and exposures may not be essential to assure financing it will still be of significant interest to APA and the State.

Question

Is Acres correct in assuming that the full range of risk analyses proposed in the POS is still required with possibly some reduction in effort on analysis of risk of default in providing revenue assurance?

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Task 11
Risk Analysis

INTRODUCTION

Susitna Base Risk Analysis
Effort and Timing
Prepared by - C. Chapman
September 4, 1981

These notes were prepared as a basis for the discussion of levels of effort and timing. They assume the following people will be involved:-

John Lawrence
Gavin Warnock
Chuck Debelius
Tee Pecora
Mary Ann Hosko
Ann Woodhead
Dale Cooper
Steve Diener
project staff and other unspecified
myself

An immediate start is assumed with a target completion by the end of February. It is assumed the study will be as simple as possible given the need to do a suitable and effective job.

The notes take three forms.

A procedure diagram, breaking subtask 11.03 into 11 tasks.

11 "tasks"

A note on each "task"

A bar chart/scheduling indicating effort spread

All are extremely rough!!

0 0 2 5 0

TASK 1: CURRENT BASE PLAN COST ESTIMATE AND SCHEDULE REVIEW

This task could involve T. Pecora plus appropriate Buffalo office people. Its purpose would be a summary statement of the current position. Its emphasis would be assumptions of notes for risk analysis purposes. A draft document should be available within a week or two of the start of the risk analysis, but it should be seen as a live document, subject to additions by the risk team as information becomes available, and subject to revisions by the project team.

T. Pecora:	1-2 weeks
Others:	1-2 weeks

TASK 2: RISK LIST DEVELOPMENT

This task would involve T. Pecora as a coordinator, but the input should be widely sought. Each risk should be clearly described to indicate what is and is not included. Of special importance are those risks normally identified in an activity item structure which may not occur to us as readily as the proposed framework, like:

- -interactions between subcontractors
- -availability of plans when anticipated
- -equipment availability
- -equipment failures to meet specifications
- -material failures
- -etc.

T. Pecora:	1 week
Others:	1 week

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TASK 3: METHODOLOGY REVIEWS

Decisions need to be made with respect to documentation formats as soon as possible. One or two changes to the software should be discussed to allow material changes to be proceeded with as soon as possible. However, a prior start on tasks 1 and 2 is probably advisable, and task 3 does not have the same priority as task 1 and 2. It should incorporate an initial review of tasks 1 and 2. It should also incorporate the allocation of tasks associated with the rest of the study insofar as it has been possible to do so before. Further, task 4 needs attention.

J. Lawrence, G. Warnock, C. Debelius, T. Pecora: 1 day each

TASK 4: RISK ASSESSMENTS

Each risk identified on task 2 which needs probabilistic treatment must be addressed by people with appropriate experience. T. Pecora should coordinate this effort which may involve a number of people in a number of offices. Risks which do not need probabilistic treatment may require upper and lower cases. Relatively few risks will be assessed directly by the project team.

T. Pecora:	2-3 weeks
Others:	12-15 weeks

TASK 5: TRANSFORMATION ASSESSMENTS

The selection of cost transformation to reliable time risk to cost is important, as is the nature of the transformations used, perhaps the most important outstanding methodology issue. As this task depends upon the completion of task 3, and it is advisable to ensure it is complete prior to the start of task 7, it is a critical task. I think C. Debelius should take the lead on this task.

C. Debelius: 1-2 weeks
S. Diener: 1 week

TASK 6: SOFTWARE REVISIONS

One or two obvious changes can be discussed at the task 3 stage, and work started then. Some others may not seem worthwhile at that stage, but their importance may increase, and some new twists will undoubtedly need dealing with. It would be a good idea to begin as soon as possible, especially as M. Hosko may have to contact Dale in England.

M. Hosko: 3-4 weeks
D. Cooper: 1 week

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TASK 7: CONSEQUENCE RESPONSE/CRITERIA ASSESSMENTS

This task is dependent upon all prior tasks, although it can be broken down by risk source to a large extent. T. Pecora should coordinate all those involved, as per allocation of work decided during task 3. A lot of risks will raise questions which will have to be dealt with by the project team. This interaction will need a lot of time if not hours.

T. Pecora:	4 weeks
Others:	20-25 weeks

TASK 8: REVIEW AND REVISE

Before any computing starts, it may be possible to make important simplications or important complications may need treatment. The methodology and the data developed to date needs a joint review at this stage.

J. Lawrence, G. Warnock, C. Debelius, T. Pecora, C. Chapman:
(2-3 days each on average)
Others 2-3 weeks possibly

0 0 2 5 0

TASK 9: INITIAL COMPUTE AND INTERPRET

Especially if we hold off computer input until this stage, initial "computer and interpret" needs to be given a full month to achieve. In particular interpretation needs more than 3 weeks given results which do not contain any errors or anomolies, if full value is to be obtained from the input effort.

M. Hosko and
A. Woodhead: 4 weeks
T. Pecora: 2 weeks
C. Debelius, D. Cooper, C. Chapman: 3-4 weeks between us

TASK 10: PROJECT RESPONSE AND RISK ANALYSIS UPDATE

The better part of a month should be allowed for feedback. If any surprises are found, more time will be desirable.

J. Lawrence, G. Warnock, C. Debelius, T. Pecora: 2-3 weeks between them

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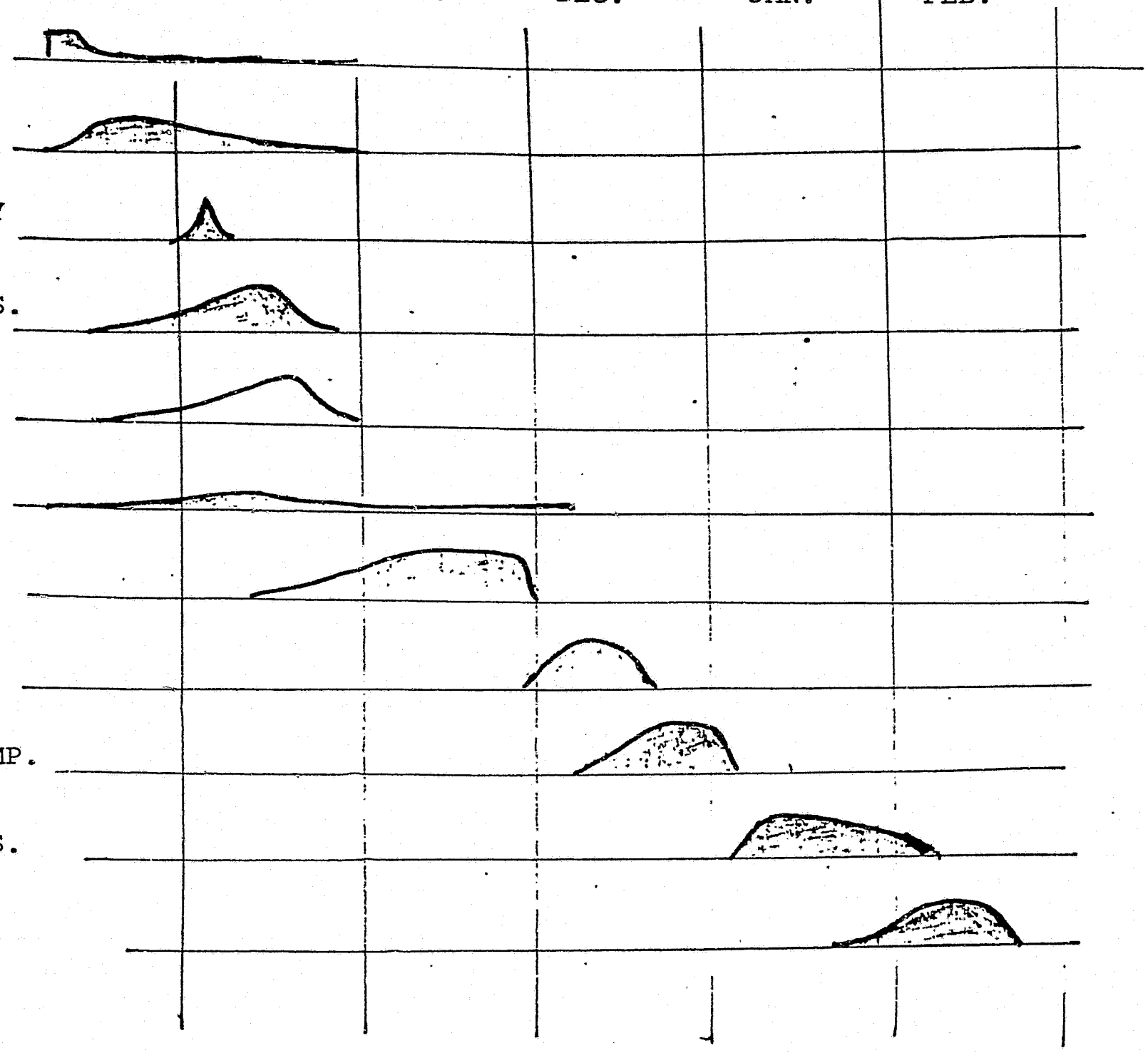
TASK 11: FINAL COMPUTE AND INTERPRET

If no surprises arise task 11 should involve much less effort than task 9. However, it would be a good idea to anticipate at least as much effort.

M. Hosko and
A. Woodhead: 4 weeks each
T. Pecora: 2 weeks
C. Debelius, D. Cooper, C. Chapman: 3-4 weeks between us

0025

BAR CHART



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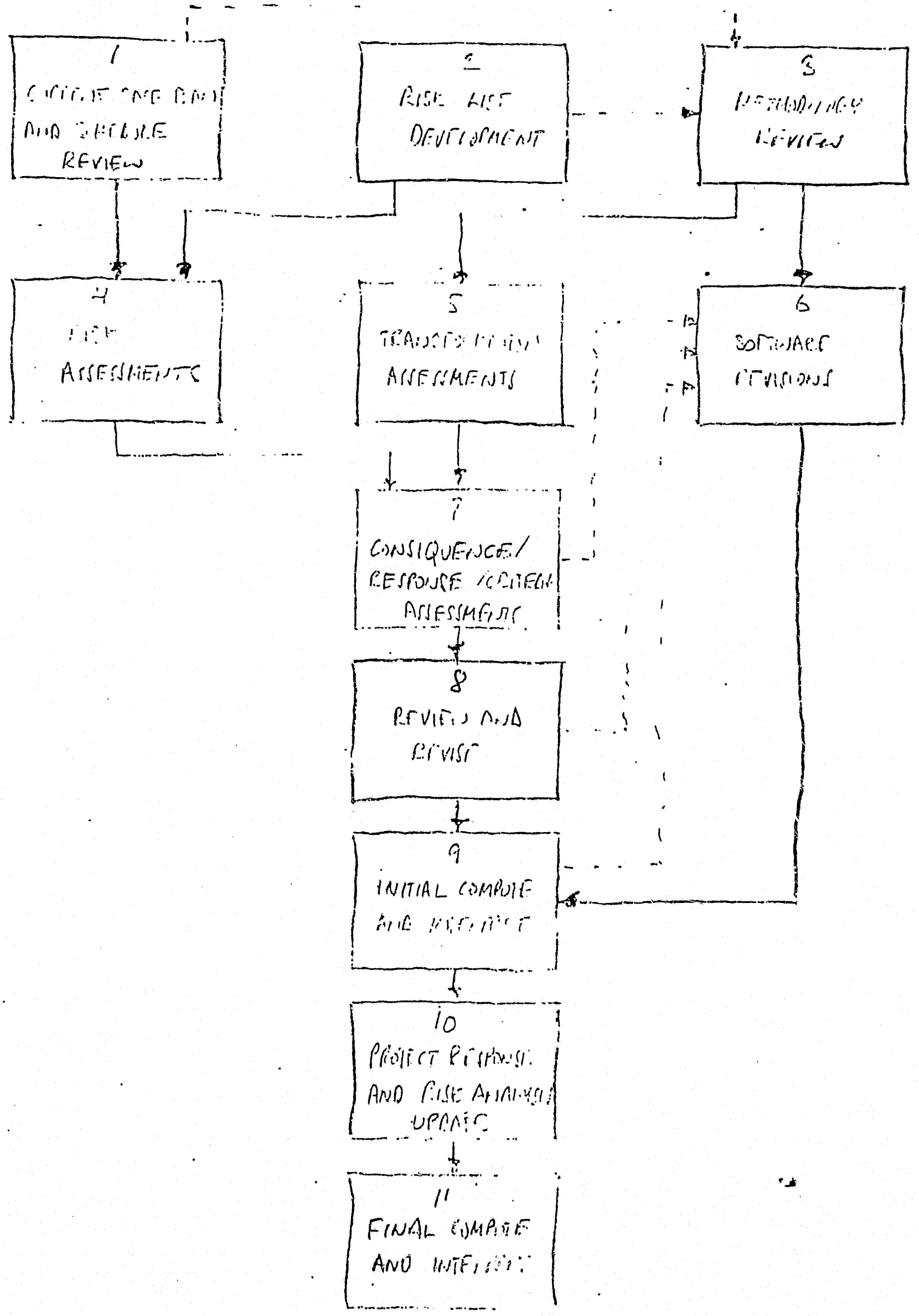
RECEIVE DIAGRAM



Memo

July 1981

To: J. G. Warnock

From: Prof. A. J. Merrett

Alaska Power Authority
Susitna Hydroelectric Project
Task 11 - Marketing and Financing

SUSITNA - RISK AND FINANCING

Problems of Present Proposed Financing

We should anticipate vigorous criticism of our financing and project analysis from Tussing and bankers who will naturally be concerned to demonstrate their superior expertise in this area. We would expect their objections to take the following form.

First the financing plan used so far is on a deterministic basis - that is, there is a clearly predictable and limited span of outcomes out of which the claims of all the entities financing the project can be met. It could be argued that this simply cannot be the case in the Alaskan economic environment and the present day world uncertainties. The possibilities must be allowed for the project over-running to an unpredictable degree as a result of expectional inflation, labour problems, geological faults, etc. Similarly interest rates may move up very substantially and the demand for energy may be down owing to cost or recession. It is only possible to treat the financing of the project deterministically if there is a negligible chance of these factors going beyond a point at which the project can be deterministically financed, that is, financed by debt capital that can, with virtual certainty, be recovered with interest. If we are to contend that this is the case then we need to prepare our ground extremely thoroughly with all the most outside adverse factors taken in conjunction into account. From the information so far supplied it seems impossible that the project is sufficiently robust to be financed on a deterministic basis.

..../2

If this is the case there is a second major problem. This is quite simply that we are dealing with a risk project for which there is no supplier of risk capital in the sense of any stated entity which will take all the residual risks of over-run or inadequate profitability in return for the residual benefits that would arise if the project were successful and there was a surplus over and above all debt financing. The financing schemes so far proposed seem to be open to the objection that they amount to the State of Alaska supplying the risk capital on an inadequate basis since there is an upper limit to what they will supply while on the other hand the beneficiary of such capital, of there are benefits, is to be the Alaskan Power Authority and through it users of electricity. Apart from the political difficulties of this there is the related problem that if things went badly wrong the politicians having directly authorised the State participation would be directly responsible while there are no corresponding benefits to them from the up-side if the project is successful.

In sum, there is the problem of devising a form of financing and responsibility which is non-deterministic with a clearly defined entity accepting all residual risks and recouping residual benefits while at the same time ensuring that the project is worthwhile political risk to the legislature which must authorise and take responsibility for authorising financing.

While this may not be strictly within the terms of reference we are given, it is not practical to answer the question as to whether or not the project is economically viable without answering it and if we do not answer it we also leave ourselves open to criticism along the lines already referred to. Our suggestion would, therefore, be that we briefly review the possibilities in the report so that we can clearly claim to have considered all the practical issues.

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As we are touching on very sensitive issues from the standpoint of the APA we should, of course, clear it with them beforehand perhaps in the form of a memorandum which would canvass the issues. In brief and after touching upon the issues already raised this might take the following form reviewing all the options.

Susitna Financing Options

Our starting point is that it is unlikely to be accepted by the providers of debt capital that Susitna is a project which has a deterministic financial outcome. Therefore there must be a supplier of risk capital. This supplier would be required to undertake to supply sufficient risk capital either to pay of all indebtedness in the event of the project not being completed, or alternatively, to complete and meet whatever over-runs are involved.

This poses the basic question as to the organisational form which the supplier of risk capital is to take. The possibilities are as follows:-

STATE OF ALASKA ITSELF AS SUPPLIER OF RISK CAPITAL

Here the State would itself take on the responsibility of supplying the risk capital. While technically simple, this has two major difficulties;

first,those supporting the project in the legislature would directly assume political responsibility. The appropriation for the project is most unlikely to be open-ended and therefore the proponents of the project in the legislature would be threatened with the possibility of having to return, possibly repeatedly, to the legislature for further appropriations;
second, this approach is open to the objection that the State of Alaska is assuming the risks in order to make the APA and users of electricity the beneficiary.

STATE RISK FINANCING THROUGH AN INDEPENDENT AGENGY OTHER THAN THE APA

This would enable the proponents of the project in the legislature to pass responsibility for it to an independent entity. It is possible that some existing entity or organisation other than the APA could fulfil this role.

To meet the objection that the entity was providing the risk capital in order that a third party (the APA) procured the benefits, it would be necessary for this entity to secure effective claim to some residual benefits after meeting the third party debt financing. It is possible that this could be achieved without direct, effective ownership. A possibility would be that the entity would receive a royalty geared to the amount of risk capital put up. But this, like all royalty arrangements, pre-supposes that the royalty will not become of a magnitude that threatens the interests of those supplying third party finance. This requires that the project be deterministic to a degree that precludes this possibility or alternatively that the royalty is contingent and residual after the claims of third parties have been met. In the latter case it would be less of a royalty and more in the character of preferred stock interest. It might, therefore, be better if the remuneration took this more conventional form. Other financing possibilities would include construction of the project and leasing it out to the APA etc.

The major difficulty with this type of separate entity is evidently the imposition of a further tier of organisation with all the delays and conflicts which this might bring about.

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APA FUNDING WITH RISK CAPITAL

Here the legislature would fund the APA with sufficient risk capital for the project making the latter in this connection something in the nature of a state-owned public utility. It might be combined with a requirement that the project be managed in such a manner as to secure an economic rate of return. It might be conjoined with a longer term intention of the Susitna projects being floated off as a privately owned public utility under APA supervision.

This option would have the advantage of organisational simplicity and therefore speed of decision taking. The legislature would also devolve responsibility to a separate and competent entity. Also on a large enough scale of financing this proposal would be not incompatible with Tussings desire for some entity prepared to finance hydroelectric projects. If the latter were set up it could either be the APA or alternatively be an agency which simply supplies risk capital to the APA.

The major objection is that the State of Alaska is getting no equity return for its equity risk. At best it will get its money back. In return for this it must be prepared to accept an indeterminate loss.

STATE RESIDUAL RENEWAL FINANCING

Here the APA and the State of Alaska would jointly own the project (under APA mangement) in the proportions in which the project is financed respectively by a) third party debt and b) advances from the State of Alaska. At the end of, say, 15 years (when the third party debt has been repaid) it would be open to the State of Alaska to dispose of its interest in whole

..../6

or in part for its market value. Provision could, however, be introduced for this interest to be offered to the APA which could finance the purchase i) by new third party debt, and ii) its proportion of the earnings surplus over the 15 years. Earnings surplus after paying off interest and principal of the third party debt would be deposited (at interest) with the State of Alaska and be part of the residual value of the project at the end of 15 years.

This arrangement has the following advantages.

1. It makes each party a beneficiary in proportion to its investment. If the project is largely financed by third party debt, the long term benefits of the project would accrue (in the form of cheap power) to the the purchasers of electricity who have paid off the debt and hence paid for the project.

2. Alternatively if the State has to finance a large proportion of the project it will secure a corresponding proportion of the value of the project which it can use with the probability of being able to compensate the citizens of Alaska for the risk they have borne. It offers a degree of automatic compensation for the party financing the overruns. If the latter occur they should be large symptomatic of either (a) General US inflation or (b) Inflation in Alaska in costs of construction. In either case it should result in an increase in alternative energy costs in Alaska and hence correspondent increase in the residual value of the project at the end of the 15 years as Alaska is forced into higher cost sources of new energy. Hence there is a degree of automatic compensation for overr as.

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3. To a large extent it should minimise the political hazards involved in the State of Alaska guaranteeing the residual financing by 2. and hence overrun - e.g. they could not be accused of 'blank check financing' of power for big business!

4. The provision for depositing the surplus earnings with the State will offer recoupment of cash to Alaska over the 15 years and give additional security to the bond holders.

CONCLUSIONS

Unless - as seems most improbable - the project clearly can be financed on a deterministic basis, that is without risk capital, it would not seem advisable to present it on this basis. Although the deterministic approach has the advantage of concealing the awkard problems of what entity is to supply the risk capital and receive the risk benefits, these issues will undoubtedly be brought out in the course of any critical review of the report. In sum since the problem is unavoidable and not capable of concealment we should make it clear and advance our own solutions to it rather than be accursed of not recognising it and having to cope with solutions - which may be unsatisfactory - proposed by our critics.

AJM/AS/CEW

26 January 1981

Financial Analysis

A) Following discussion of the approach now appropriate to financing of the Susitna Project it was decided to adopt the following criteria:-

1. To reflect the likely mix and cost of State and debt market financing:-

		Low	Median	High
(a)	% Funding from State of Alaska (% of total project cost)	30%	45%	60%
(b)	% Return on investment applicable to State funds		5%	
(c)	% Interest rate on senior debt financing	10%		14%
(d)	Debt maturity period commences in the year following the first full year of operation through semi annual level debt services to amortise the principal over 30 years from commencement of debt service		30 years	
(e)	Interest and principal payments on debt services to be levelised over period set out in sub paragraph (d)			
(f)	Interest to be capitalised to 1 year after full operation of each project segment (e.g. Watana 400 MW Watana 800 MW or Devil Canyon 600 MW)			

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(c) To allow for debt service — maintain 1.25 times debt service initially, rising to 1.5 times cover, on requirement for annual debt service on senior debt.

Note:- Amounts accumulated in funds to be invested with interest used to reduce (or subsidise) the rates at which energy is sold.

3. to allow for various charges on capital account

(a) Interest on debt to be capitalised to one year past first year of full operation for each project segment

(b) Working capital may be treated as capital required for project

(c) Construction cost estimates to be subject to an allowance for inflation equal to 10% p.a.

4. to allow for various charges on earnings account

(a) Revenue to be accounted for firm energy only

(b) Secondary energy revenue (assessed with appropriate probability and rate KWh) should be accumulated in a separate fund

(c) Operating cost estimates to be subject to an allowance for inflation equal to 8% p.a.

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(d) The 5% indicated return on State of Alaska investment is required for "test purposes" only it is availabe to cover operating costs and debt service and no income will in fact be paid to State funds

B)

1. Financial analysis of cases covering the range of criteria will involve the following runs:

(a)	% Funding	%ROI	% Interest on Senior debt	Debt Maturity Years	Construction	Inflatic p.a. Operatic
Run x 1	30	5	10	30	10	8
x 2	30	5	14	30	10	8
x 3	45	5	10	30	10	8
x 4	45	5	14	30	10	8
x 5	60	5	10	30	10	8
x 6	60	5	14	30	10	8

2. Energy costs in mills/KWh will be determined initially for 1993 i.e. year 8 of the schedule. Then to obtain an overall picture of the likely outcome the FEZIBL program will be run for

(i) Staring mill rate increased in subsequent years by inflation @ 8% per annum with this rate of increase applying also to operating costs

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(ii) Starting mill rate increased in subsequent years by inflation in operating costs only @ 8% per annum

(iii) Starting mill rate increased in subsequent years by a median rate between 2(i) and 2(ii) of 3 1/2% with operating costs increasing @ 8% per annum

(Note:- Any construction costs incurred even subsequent to commerical operation will be increased at 10% p.a. Renewals and replacement allowances to increase at 8% p.a.)

0025

ACRES

OFFICE MEMORANDUM

TO: Gavin Warnock

Date: April 20, 1981

File: P5700.07.11

FROM: Steven Diener

cc: J. Lawrence
I. Hutchison

SUBJECT: ESCALATION IN REAL CONSTRUCTION COSTS OF THE SUSITNA PROJECT

As you suggested, I have briefly reviewed historical and forecast rates of construction cost escalation. This followed Robert Mohn's letter to John Lawrence (March 25, 1981) asking us to assess Rohan's contention that there is a trend of real escalation of 2 percent and that this figure may be more appropriate than our initial assumption of zero percent.

The attached table summarizes historical trends and projected growth rates to 2005. I believe Rohan's argument stems from annual growth rates (2.1 percent) based on the 1967 to 1979 period. But the choice of historical period is crucial. Between 1967 and 1980 real cost escalation was 1.6 percent and in the most recent 1977 to 1980 time span real costs actually declined at an annual rate of 2.6 percent. That is, construction costs grew less rapidly than overall (consumer) prices. As a comparison, the index of real construction costs for Canadian hydroelectric generating stations grew by 1.3 percent per year from 1971 to 1979 and declined by 0.6 percent per year in the more recent period from 1975 to 1979.

In the forecast period, the per annum rate of real cost escalation increases to 1.4 percent (1985 to 1990) and then hovers between 0.3 percent (1990 to 1995) and 0.6 percent (2000 to 2005). The average annual compound rate is 0.65 percent between 1980 and 2005.

Given this much information, an appropriate range of rates would extend from -2 percent to 3 percent, with zero percent being a reasonable base-line assumption. But there are at least two other points not raised by Rohan: First, all of these figures are national in scope without reference to local (Alaskan) economic conditions during the construction phase of the project. If the timing of construction is such that it is a part of a "bunching" of giant projects, then material, labor and other components of investment costs

.../2

could be expected to escalate faster than the U.S. averages. If the timing is such that Susitna is a contracyclical investment (that is, it is not concurrent with Alcan Pipeline types of projects), then the material, labor and other cost components are likely to escalate less rapidly than the U.S. averages.

Second, if we expect construction input costs to escalate at the rate of general price inflation, then a necessary condition for Rohan's 2 percent rate to hold is that the productivity of labor and capital will decrease at about 2 percent per year. As it is more reasonable to assume continuing technical progress and improving productivity in construction, we have another reason to be wary of Rohan's 2 percent figure for real cost escalation.

Our final feasibility report should therefore examine not only past and forecast trends in U.S. construction cost escalation. We should also deal with the sensitivity of project cost escalation to the timing of the investment and its temporal relation to other major Alaskan projects, and with expectations of productivity improvement in the construction of hydro generating stations.

Steven Diener

SGD:md

Att

TABLE 1

U.S. RATES OF ESCALATION IN REAL CONSTRUCTION COSTS

	Annual Escalation (%)		
	CPI[1]	Construction Costs[2]	Real Construction Costs
(A) Historical			
1977 to 1978	7.6	7.7	0.1
1978 to 1979	11.5	8.2	- 3.0
1979 to 1980 (prelim.)	13.5	7.8	- 5.0
1967 to 1980 (prelim.)	7.2	8.9	- 1.6
1967 to 1979	6.7	8.9	2.1
1977 to 1980 (prelim.)	10.8	7.9	- 2.6
(B) Forecast			
1980 to 1985	8.7	9.7	0.9
1985 to 1990	8.1	9.6	1.4
1990 to 1995	7.4	7.7	0.3
1995 to 2000	6.9	7.3	0.4
2000 to 2005	6.8	7.4	0.6
1980 to 2005	7.6	8.3	0.7

[1] Consumer Price Index for U.S. Urban Wage Earners and Clerical Workers from Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics (for historical data), and Data Resources, Inc. (DRI), U.S. Long-term Review, Fall 1980 (for forecast data).

[2] Historical costs refer to the U.S. non-building construction cost index of the Engineering News-Record from Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis. Forecast costs refer to the U.S. implicit price deflator (index) for fixed investment in nonresidential structures, from DRI, U.S. Long-term Review, Fall 1980.

March 13, 1981

Professor A. J. Merrett
c/o Mr. Allen Sykes
Willis Faber
10 Trinity Place
London, England
EC3P 3AX

Dear Tony,

I was glad to have the opportunity of todays telephone discussion with you and to pass on the information derived from todays final OGP-5 runs in the current phase of the planning study. These runs have been made to test the sensitivity of the project to capital costs in 1981 dollars including transmission costs (for both the Susitna and all thermal systems, the latter having basically the addition of the Fairbanks-Anchorage intertie). Price levels used in the construction cost estimate have increased from 1980 to 1981 by about 11.3% and in the computation it has been (rather generously) assumed that full prices have escalated further by 30% to provide the new 1981 base for opportunity costs for oil, gas and coal. There is evidence that our earlier assumptions of shadow prices were too low for oil and gas and coal is being in any case tested for sensitivity to 0% escalation in real terms.

The capital costs introduced to the latest OGP-5 runs are regarded as upper limits - not to exceed levels but nevertheless once "tabled" may easily be assumed as the basis for future financiability calculations. The values are:-

	Capital Costs 1981 $ Millions	Date of 1st Power
Watana 400MW	3227	1993
Addition 400MW	167	1996
Devil Canyon 400MW	1624	2000
Transmission Facility	441	1993

These costs include IDC. The net construction cost comparable to the $2890 m (W & DC) is $4400 m.

ACRES AMERICAN INCORPORATED
Consulting Engineers
The Liberty Bank Building Main at Court
Buffalo, New York 14202
Telephone: 716-853-7525 Telex: 91-6421 ACRES BUF
Other Offices: Columbia MD Pittsburgh PA Raleigh NC Washington DC

(Intertie cost included above which would still apply to All-Thermal case is $357 million)

Net present value for 2040 for three cases are:-

	With Susitna	All Thermal
	Millions $	
Base case - Susitna (B/C ratio computed at 1.5)	7833	9559
With thermal capital costs lowered by factor of 1.4	7780	8914
With 0% escalation on coal costs	7669	8883

It is apparent that once again Susitna meets the economic test, but of course the gaps are narrowing.

On the entry cost side the situation has, of course, worsened considerable but based on the revised inputs it would appear that the avoidable costs have risen to a range of 37 mills/Kwhr (average all thermal) to about 48 mills/Kwhr (indicated avoided cost by adding Susitna in 1993).

I attach the relevant sections of the statement prepared by APA on Economic Analysis and on Financial and Construction issues. We have concurred with the wording they have put together but passed on a warning despite the favourable economic picture the marketing problem under conventional fincncing arrangement still looms large.

We have decided that further action on financing studies should now be deferred until late April which would allow you to enjoy a peaceful Easter break with the family. In any event I shall advise you of any interesting developments in the meantime.

Thanks you for all your assistance with kindest regards.

Yours sincerely,

J. G. Warnock
Vice President
Corporate Development

JGW:dn
Enclosure

TO: J.G. Wenner, Toronto

FROM P. Jones / Milton, Colo.

S 1.8

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1981 COSTS

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT

WITH UNITS

ALASKA RAILBELT
ZERO X - 32
JOB NUMBER 2MLCV7 03/13/81

GENERATION SYSTEM

TYPE	NUCL 1	COAL 2	NGASBT 3	OIL GT 4	DIESEL 5	CONCTC 6	TYPES 7-10		
BF TESTING	0	1991	1991	0	1991	0	***		
PCI TABLE	0	0	0	0	0	0			
1990 MW	0	45	454	148	45	261	144	SUM=	1097

YR	YEARLY		MW		ABILITIES			TOTAL CAPAB. + TIES	
80									
81								1859	
82								1827	
83							400*	1412	
84								1378	
85								1358	
86							400*	1674	
87								1624	
88								1578	
89								1578	
0							382*	1937	
1								1918	
2				4X	10		1*	1904	
3			2X	75				2007	
4								2007	
5			2X	75				2079	
6			1X	75			1*	2055	
7		100*						2155	
8			1X	75	1X	10		2148	
9			1X	75				2222	
10								2222	

MW ADD	0	100	525	0	70	0	1184	SUM= 1879
MW RET	0	-45	-454	-148	-45	0	0	SUM= -732
2010	0	100	525	0	70	261	1328	SUM= 2284
PCT TOT	0.	4.5	23.6	0.	3.1	9.0	59.7	SUM=100 PCT
ANTS	0	0	525	0	70	0	0	SUM= 595
PCT TOT	0.	0.	88.2	0.	11.8	0.	0.	SUM=100 PCT

* COMMITTED MW

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	H/Y	COST IN MILLIONS YEARLY COST	CUM. P TOTAL
****	*****	*****	****	****	******	*****	*******	*****
1991	775	1059	1059	36.6	0.001	0.	163.0	121.
1992	815	1027	1027	26.0	0.023	0.	186.8	256.
1993	864	1412	1412	63.3	0.016	0.	211.3	404.
1994	904	1391	1398	54.5	0.000	0.	227.4	559.
1995	944	1351	1358	43.8	0.000	0.	239.0	717.
1996	979	1694	1694	74.5	0.000	0.	253.2	879.
1997	1035	1624	1624	56.8	0.001	0.	276.4	1052.
1998	1082	1570	1570	45.0	0.029	0.	295.1	1230.
1999	1128	1570	1570	39.1	0.090	0.	314.9	1415.
2000	1173	1937	1937	65.1	0.003	0.	286.4	1575.
2001	1214	1918	1918	57.9	0.021	0.	293.6	1741.
2002	1255	1906	1906	51.8	0.089	0.	307.1	1906.
2003	1297	2002	2002	54.3	0.024	0.	317.6	2072.
2004	1338	2002	2002	49.6	0.035	0.	332.3	2240.
2005	1379	2079	2079	50.7	0.015	0.	349.2	2412.
2006	1427	2055	2055	43.9	0.032	0.	358.8	2582.
2007	1477	2155	2155	45.8	0.039	0.	377.1	2757.
2008	1537	2148	2148	39.7	0.073	0.	397.1	2937.
2009	1586	2222	2222	40.0	0.039	0.	412.3	3117.
2010	1635	2222	2222	35.9	0.061	0.	428.6	3299.

R	POOL PCDK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY INV.	$/MWH FUEL	O&M	B.I.	TOTAL
**	*******	********	*******	*******	*****	*****	*****	*****	*****
1	775	4250	62.40	163	2.11	34.48	1.57	0.	38.35
2	815	4481	62.49	187	2.00	38.17	1.51	0.	41.68
3	864	4730	62.56	211	19.94	22.69	1.84	0.	44.47
4	904	4949	62.50	227	31.38	12.51	2.07	0.	45.95
5	944	5168	62.50	239	30.05	14.22	1.98	0.	46.25
6	979	5325	62.50	253	30.41	14.60	2.54	0.	47.54
7	1035	5647	62.50	276	28.58	17.80	2.39	0.	48.77
8	1082	5919	62.46	295	27.38	20.21	2.30	0.	49.89
9	1128	6164	62.46	315	26.27	22.58	2.22	0.	51.07
10	1173	6429	62.49	284	35.27	6.35	2.93	0.	44.55
11	1214	6636	62.49	274	34.17	7.24	2.84	0.	44.25
12	1255	6860	62.49	307	33.45	8.05	2.79	0.	44.77
13	1297	7078	62.30	318	32.07	9.35	2.66	0.	44.07
14	1338	7322	62.30	332	31.77	11.08	2.58	0.	45.38
15	1379	7526	62.38	349	31.53	12.59	2.47	0.	46.49
16	1427	7789	62.36	357	30.48	12.93	2.41	0.	45.82
17	1477	8061	62.38	377	32.10	12.21	2.47	0.	46.78
18	1537	8423	62.48	397	30.93	14.03	2.37	0.	47.37
19	1586	8678	62.49	412	30.26	14.94	2.34	0.	47.54
20	1635	8937	62.49	429	27.35	16.28	2.31	0.	47.95

GENERAL ELECTRIC COMPANY
UGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT

1981 Costs

ALASKA RAILBELT
ZERO% - 0%
JOB NUMBER 2BLCK9 03/13/81

THERMAL SYSTEM
GENERATION STSTEM

	NUKE	COAL	NGASCT	OIL GT	DIESEL	COMCYC	TYPES 7-10	
TYPE	1	2	3	4	5	6	***	
OPTNZING	0	1991	1991	0	1991	0		SUM= 107
PCT IKLN	0	0	0	0	0	201	144	
1990 BN	0	42	454	168	45			

YR	YEARLY				ADDITIONS			TOTAL CAPAB. + TIES
80								1025
81								1027
82		1001						1112
83								1098
84	2X 100							1258
85	1X 100							1294
86			1X 75					1297
87	1X 100							1345
88			1X 75					1420
89								1485
90	1X 100							1486
91	2X 100					1X 10		1613
92			1X 75					1567
93			1X 75					1641
94			2X 75					1646
95			1X 75			4X 10		1696
96	1X 100					3X 10		1771
97			1X 75					1817
98								1848
99								1923
10								

				0	80	0	0	SUB= 1
	0	900	600			0	0	SUB= -
HW ADD	0	-45	-454	-168	-45			
HW RET	0					201	144	SUB= 1
				0	80			
2010	0	900	600			10.4	7.5	SUB=104
PCT TOT	0.	45.8	31.2	0.	5.2			
				0	80	0	0	SUB= 1
AUTO	0.	900	600	0.	5.4	0.	0.	SUB=104
PCT TOT	0.	54.1	40.5					

* COMMITTED HW

ALASKA RAILBELT
ELKOX -- 32
JOB NUMBER ELCK7 03/13/81
****

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TOTAL CAPABILITY (INCLUDING TIES) TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/T	LOSS OF LOAD PROBABILITY H/Y	COST IN MILLION $ YEARLY COST	COST IN MILLION $ CUM. PW TOTAL
****	*****	*****	*****	****	******	******	*******	*******
1981	775	1059	1059	36.6	0.001	0.	164.7	127.6
1982	815	1027	1027	26.0	0.003	0.	188.5	238.8
1983	864	1112	1112	28.7	0.025	0.	222.7	415.1
1984	904	1098	1098	21.4	0.005	0.	245.6	582.3
1985	944	1258	1258	33.2	0.024	0.	254.3	750.4
1986	978	1274	1274	33.4	0.022	0.	266.6	921.4
1987	1035	1299	1299	25.4	0.043	0.	284.9	1100.4
1988	1082	1345	1345	24.3	0.065	0.	310.0	1287.7
1989	1128	1420	1420	25.9	0.037	0.	326.0	1480.6
1990	1173	1405	1405	19.7	0.076	0.	347.7	1679.0
2000	1173	1486	1486	22.4	0.040	0.	368.1	1882.8
2001	1214	1613	1613	28.5	0.027	0.	402.4	2099.2
2002	1255	1547	1367	21.0	0.097	0.	417.1	2317.9
2003	1297	1644	1644	22.9	0.041	0.	440.5	2541.2
2004	1338	1646	1646	17.3	0.003	0.	463.2	2767.1
2005	1377	1696	1696	18.8	0.003	0.	480.5	2990.6
2006	1427	1771	1771	19.7	0.041	0.	497.9	3229.4
2007	1477	1819	1819	18.3	0.062	0.	524.7	3465.6
2008	1537	1848	1848	16.5	0.099	0.	541.1	3702.1
2009	1586	1923	1923	17.4	0.036	0.	559.1	3939.4
2010	1635							

YR	FUEL PEAK (BU)	TOTAL ENERGY (BUU)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY INV.	YEARLY FUEL	$/MWH O&M	$/MWH M.I.	$/MWH TOTAL
**	******	*******	******	******	*****	*****	*****	*****	******
81	723	4250	62.60	165	3.11	24.47	1.99	0.	38.76
82	815	4481	62.66	189	2.60	38.16	1.91	0.	42.66
83	864	4730	62.50	223	9.85	35.16	2.10	0.	47.11
84	904	4949	62.50	244	9.41	35.17	2.05	0.	47.63
85	944	5168	62.50	254	16.29	30.44	2.47	0.	49.20
86	978	5325	62.50	267	19.34	28.08	2.65	0.	50.07
87	1035	5647	62.50	287	18.45	27.65	2.53	0.	50.63
88	1082	5914	62.40	319	20.86	28.92	2.44	0.	52.42
89	1128	6166	62.48	320	20.26	30.34	2.69	0.	53.29
90	1173	6429	62.40	348	19.43	32.15	2.52	0.	54.11
91	1173	6436	62.40	368	21.66	31.17	2.64	0.	55.48
92	1214	6660	62.40	402	26.44	29.46	2.77	0.	58.66
93	1255	7075	62.30	419	25.69	30.81	2.71	0.	59.21
94	1297	7372	62.30	441	25.05	32.47	2.68	0.	60.20
95	1338	7526	62.38	463	24.58	34.39	2.58	0.	61.55
96	1377	7788	62.38	481	24.15	35.01	2.54	0.	61.71
97	1427	8061	62.39	498	23.53	35.72	2.51	0.	61.75
98	1477	8425	62.49	525	24.97	34.78	2.53	0.	62.28
99	1537	8669	62.40	541	24.47	35.47	2.59	0.	62.41
10	1635	9237	62.40	557	23.87	36.23	2.44	0.	62.54

OFFICE MEMORANDUM

TO: John Lawrence

Date: March 10, 1981

File: P5700.07.11

FROM: J. G. Warnock

cc: C. A. Debelius

SUBJECT: ALASKA POWER AUTHORITY
SUSITNA POWER PROJECT
TASK 11 - MARKETING AND FINANCE

At the meeting convened by First Boston Corporation in Washington on February 4th with interests concerned over the current IRC Section 103 rulings, C. D. Williams was tasked with preparing a first draft of a possible legislature approach.

The attached material will keep you advised of the situation which I fear is not too hopefu. in view of the attitude being taken by the present administration.

At the February 4th meeting Eric Yould advised that he was not too concerned over the outcome of the effort being launched by the hydroelectric interest as a body. He suggested that APA and the State of Alaska may have an individual solution for the Susitna case.

for Dai Nolan
J. G. Warnock

JGW:dn

V+

ACRES BUF

ACRES TOR

Out
MAR 6/81

MARCH 6, 1981 P5700.00

ATTN: I. A. HUTCHISON

SUSITNA - CAPITAL COST COMPONENTS

FROM CFLCO RECORDS MANAGEMENT AND ENGINEERING WAS 6 0/0 OF DIRECT CONSTRUCTION COST. OVERHEADS ADMINISTRATION AND MISCELLANEOUS WAS 17 1/2 0/0 OF DIRECT CONSTRUCTION COST WITH CAPITALIZED OWNERS COST REPRESENTING ABOUT 7 0/0 OF THIS. PLEASE CALL IF YOUR REQUIRE MORE DETAILS.

J. G. WARNOCK

ACRES TORONTO

+

ACRES BUF

ACRES TOR

+

ACRES BUF

ACRES TOR

Out
Mar 6/81

ATTN: JOHN HAYDEN

MARCH 6, 1981 P50XXX P5700.00

SUSITNA - KX ALTERNATIVE GENERATION PLANS

IN REVIEWING CURVES YOU PROVIDED IT OCCURS TO ME THAT (1) WE SHOULD BE SHOWING CONSISTENTLY PRESENT WORTH VALUES OUT TO 2040 TO CLEARLY EMBRACE REPLACEMENTS OF THERMAL PLANT COSTS (2) IT IS SURELY DANGEROUS TO DISPLAY COMPARISONS BASED ON DLR 2.89 BILLION WHEN WE ARE AWARE THAT CAPITAL COSTS FOR SUSITNA MAY BE 50 0/0 OR MORE HIGHER. WOULD PROBLEM NOT BE EASED BY PLOTTING A RANGE WITHIN WHICH WATANA MIGHT FALL WITH FOR INSTANCE FIGURE 2 SHOWING WDC 1200 LINE AS LOWER BOUND AND SHADED AREA COVERING ZONE WHICH WOULD ACCOMMODATE YOUR HIGHER CAPITAL COST ESTIMATES (3) FIGURE 3 REQUIRES SOME ADDITIONAL NOTES TO MAKE IT EASILY UNDERSTANDABLE.

J. G. WARNOCK

ACRES TORONTO

+

ACRES BUF

ACRES TOR

V

ACRES BUF

ACRES TOR

MARCH 4/81 P5700.07.11

ATTN: RICK CHASE

CC: J. D. LAWRENCE

Out
Mar 4/81

RE: SUSITNA PROJECT P5700.11
LIMITATION OF FUNDS

IN ORDER THAT YOUR ACCOUNTING MAY INCLUDE APPROPRIATE PROVISION I WISH TO ADVISE OF COMPUTER COSTS TASK 11 JANUARY/FEBRUARY OF THE ORDER OF DLR 7500 AND CONSULTANTS IN ADDITION TO INVOICES SO FAR RENDERED OF APPROXIMATELY DLR 15000 GENERALLY IN LINE WITH BUDGET PROVISIONS. MARCH EXPENDITURES TO BE SEVERELY LIMITED TO COMPLETION OF POR BUT STILL ESTIMATED AT DLR 12000 PCOS PLUS ABOUT DLR 4000 DISBURSEMENTS.

J G WARNOCK

ACRES TORONTO

ACRES BUF

ACRES TOR

ACRES BUF

ACRES TOR

MARCH 3/81

ATTMN: AL KUCZYNSKI

Out Mar 3

TASK 11 - MARKETING AND FINANCE

JANUARY 1981

SUBTASK 11.01 - PROJECT OVERVIEW PREPARATION AND UPDATE

PREPARATION OF INPUT TO THE PROJECT OVERVIEW REPORT CONTINUED WITH CHAPTER AUTHORS PROVIDING THE COORDINATING/EDITORAL TEAM WITH INPUT. ADVANCE DRAFT CHAPTERS FOR CHAPTER 13 - POWER AND ENERGY MARKETING CHAPTER 16 - FINANCIAL ANALYSIS AND CHAPTER 17 - SECURITY OF PROECT CAPITAL COST AND REVENUE STRUCTURE WERE PREPARED AND SUMBITTED TO APA AND THE MANAGING UNDERWRITER GROUP. MEETING TOOK PLACE WITH ARTHUR YOUNG, MANAGERS OF RAILBELT ALTERNATIVE ENERGY STUDIES TO INITIATE INTERFACE BETWEEN SUSITNA STUDIES AND COOK INLET TIDAL POWER REVIEW NOW BEING CONDUCTED SEPARATELY BY AAI.

SUBTAKE 11.02 - INTERNAL REPORTS

BEING CONDUCTED SEPARATELY BY AAI.

SUBTAKE 11.02 - INTERNAL REPORTS

FOLLOWING TESTING OF THE FINANCIAL MODELS IN LATE DECEMBER WORK PROCEEDED ON ANALYSIS OF ALTERNATIVE FINANCING STRUCTURES INCLUDING TREATMENT OF SEPARATE FUNDING AND ROUALTY RECOVERY FOR WATANA DAM, SUBORDINATED DEBT SUPPORT AND RESIDUAL RECOVERY EQUITY ARRANGEMENTS. SENSITIVITY ANALYSES WERE CONDUCTED ON VARYING CAPITAL COST AND ALTERNATIVE ENERGY COST ESCALATION PATTERNS TO DETERMINE DCF RETURNS. INTERACTION WAS DEVELOPED BETWEEN THE FINANCIAL/ECONOMIC ANALYSIS AND OGP-5 GENERATION PLANNING MODEL. INPUT ON SOCIO-ECONOMIC ISSUES WERE PROVIDED TO ASSESSMENT OF NET ECONOMIC BENEFITS. PRESENTATION OF FINANCIAL MODEL RESULTS TO APA TOOK PLACE AT MEETINGS ON JANUARY 20/21 AND TASK 11 WAS REPRESENTED AT THE EXTERNAL REVIEW PANEL MEETING JANUARY 22. MEETING WERE HELD WITH PARTICIPATING SPECIALIST CONSULTANTS TO DISCUSS PROCEDURES, MODEL OUTPUT AND FINANCING CONCEPTS TO RELIEVE HIGH FRONT END LOADINGS. ASSESSMENT CONTINUED OF LIKELY LEVEL OF ENERGY PRICING ON SYSTEM WHEN SUSITNA COMES INTO OPERATION. DAT CONCERNING POTENTIAL UTILITY PURCHASERS AND THEIR INTERACTION WITH ALASKA PUBLIC UTILITIES COMMISSION AND ALASKA POWER ADMINISTRATION WERE COLLECTED.

SUBTASK 11.03 ALTERNATIVE POWER SERVICE RISK ANALYSIS

DR. C.B. CHAPMAN CONTRIBUTED TO COORDINATION MEETING HELD BETWEEN STAFF INVOLVED IN TASKS 6,9 AND 11.

SUBTASK 11.05

RISK ANALYSIS APPROACHES WERE FURTHER REVIEWED IN CONJUNCTION WITH TASK 11.02 FINANCIAL FEASIBILITY ANALYSIS AND THE PREPARATION OF CHAPTERS 16 AND 17 OF THE POR.

TASK 11 -MARKETING AND FINANCE

FEBRUARY 1981

SUBTASK 11.01 - PROJECT OVERVIEW PREPARATION AND UPDATE

AN ASSEMBLY OF FIRST DRAFT CHAPTERS OF THE PROJECT OVERVIEW WAS PREPARED AND DISTRIBUTED WITHIN THEPROJECT TEAM FOR REVIEW. THE VOLUME OF COPY PRESENTED BY INDIVIDUAL CHAPTER AUTHORS NOW REQUIRES SUBSTANTIAL EDITING DOWN TO ANY APPROPRIATELY CONCISE AND PERTINENT LEVEL. THE ADVANCED DRAFTS OF CHAPTER 13 - POWER AND ENERGY MARKETING CHAPTER 16 - FINANCIAL ANALYSIS AND CHAPTER 17 - SECURITY OF THE PROJECT CAPITAL COSTS AND REVENUE STRUCTURE WERE EXPLAINED TO THE MANAGING UNDERWRITERS AND FINANCIAL ADVISORS AGAINST THE GENERAL BACKGROUND OF THE PLAN OF STUDY, DURING WASHINGTON, DC. MEETINGS ON FEBRUARY 5TH.

SUBTASK 11.02 - INTERNAL REPORTS

FINANCIAL ANALYSIS OF VARIOUS ALTERNATIVES PROCEEDED IN PREPARATION FOR MEETING WITH THE MANAGING UNDERWRITERS GROUP AND LATER IN THE MONTH TO TEST SENSITIVITY OF PROJECT TO VARIOUS ENERGY PRICING SCENARIOS AT THE TIME SUSITNA PROJECT WOULD COME INTO OPERATION. THIS INVOLVED ALSO ECONOMIC ANALYSIS RUNS USING FEZIBL MODEL AS BACK UP TO OGP-5 SYSTEM PLANNING RUNS, ATTENTION WAS CONCENTRATED ON THE SIGNIFICANCE OF ENERGY/POWER PRICING IN EARLY YEARS OF OPERATION TO OBTAIN RELIABLE DATA FOR FORMULATING FINANCING OPTIONS.

ANALYSIS OF THE RAILBELT UTILITY MARKET PROSPECTS PROCEEDED THROUGH REVIEW OF FILINGS WITH APUC AND OTHER DATA WITH A VIEW OF ASSESSING SIGNIFICANCE OF PURCHASERS/CONSUMERS IN FINANCING ARRANGEMENTS. TYPICAL FINANCING/MARKETING SCENARIOS OFFERED BY OTHER UTILITY SYSTEMS WERE REVIEWED IN A STUDY OF PRECEDENT SITUATIONS.

SUBTASK 11.06 - FINANCING RISK ANALYSIS

FINANCING RISKS WERE FUTHER REVIEWED AND PROGRESS MADE TO A COMPREHENSIVE TREATMENT OF OVERALL RISK.

SUBTASK 11.07 - RESOLUTION OF TAX EXEMPT BOARD ISSUE

ATTENDANCE WAS PROVIDED AT WASHINGTON CONFERENCE ARRANGED BY FIRST BOSTON CORPORATION TO REVIEW THE CURRENT POSITION ON EFFORTS TO SECURE NECESSARY RELAXATION OF IRS SECTION 103 RULINGS TO PERMIT TAX EXEMPT BOND ISSUE FOR SUSITNA AND OTHER HYDROELECTRIC POWER PROJECTS.

J.G. WARNOCK

ACRES BUF

ACRES TOR

March 2 - 1981

To: J. G. Warnock

From: H. D. Leach Dale Nolan for H.D. Leach

Re: SUSITNA
CONCLUDING NOTES ON TASK 11

1) Scale: From the standpoint of APA we should try to keep the options open.

This suggests we should try to plan for 400 MW, even if subsequent events make it desirable to 'move-up' to 800 MW or 1200.

N.B. It would be desirable to get APA to stipulate a 'security' guideline (e.g. answer the question "how high must the Railbelt peak reach before they agree to 800 MW - or 1200 MW from Susitna"?)

2) Money Rates and Term:

Funding is so far ahead, that our 10% provision seems adequate, (equivalent to say 12 1/2% taxable).

Normally, one might predicate 15 years to 20 years term, or even longer. However: a) this is a new venture; b) the construction period is effectively part of the term.

So I think 15 years is sufficiently long term to predicate.

3) Taxes: We might be required later to include some modest allowance in lieu of local taxes. (but we don't want to ask for it!)

4) Coverage/Equity:

In principle (this threshhold aside) I don't believe we need substantial outside equity for public power projects.

Example: (per our conversation on this topic)

..../2

	% Capital	Rate	Amount
Debt	67	10	6.70
Equity	33	15	4.95
	100		11.65%

In this case the coverage (before tax of, say 50%, is 16.6 ÷ 6.7 = 2.48 times).

(ii) But half of the coverage goes to the tax collectors. So perhaps the following is sufficient:

	Capital	(% Capital)	%	Equivalent Return	Effective Return %
Debt	67	(80.2)	10	6.70	8.02)
Equity	16.5	(19.8)	15	2.48	2.97)
	83.5	100.0		9.18	(10.99)%

Coverage = 1.37 times

(iii) The above makes no provision for the fact that commercial utilities customarily distribute 66% of earnings in dividends. So perhaps a public power utility can get by with:

	Capital	% Capital	%	Equivalent	Effective
Debt	67	91.2	10	6.70	9.12)
Equity	6.5	8.8	15	.98	1.32)
	73.5	100.0		7.68	(10.44)%

Coverage = 1.14 times

(However, it should be recognized that REA is calling for a TIER - total interest earnings - of 1.5, or more, so we ought to talk in terms of 1.50 to 1.75)

..../3

5) The 'Watana 400' Package:

Within a few mills, we know what this package might cost and what it would produce. We also believe that it would be good value, long term. (e.g. it compares favourably with a thermal alternative on a lifetime basis).

Where we have our problem is how to price it into the existing system.

So I think we need to know a whole lot more about the system pricing within the Railbelt utility networks.

Suggestion:

What we need is specific and detailed information on pricing and consumption of electricity in the Railbelt (not general market or economic data).

Example:

Variations in per customer consumption;
Variations in load profiles;
Variations between zones;
Variations in rate schedules, elasticity data, etc.

6) Pricing for the Railbelt:

Initial studies suggest that it is going to be difficult to establish a single 2 part rate for the Railbelt. Possibly the Interconnection Study has already established that point. In any event there are going to be considerable structural shifts in the price mechanism.

What is not yet evident is:

(i) How sensitive is Alaskan electricity demand to changes in price?

(ii) What could load management do to improve diversity and other load characteristics in the Railbelt?

..../4

Note:	Av. Price 1979	Av. Cons/ Res Customer
Chugach	38.3 mills	11,155 Kwhr
Golden Valley	75 mills	10,427 Kwhr
Fairbanks Municipal	85.6 mills	5,870 Kwhr
U.S. av. (1977)	39.2 mills	8,693 Kwhr

Consumption Profile:

It should be recognized that, while commercial load is substantial in the Railbelt industrial load is relatively modest. Moreover in the 1972-77 period the 93% increases in Alaskan electricity sales conceals a 54% decline in industrial consumption for the State.

Elasticity:

Study of articles by J. Hirsheifer, Lester Taylor and Mount, Chapman and Tyrell indicate that elasticity is in the range of -1.2 to -1.8 (or -1 to -2, per the 1976 Battelle Study).

7) Financial Integrity of Distributors:

Relative to the scale and capital costs of Susitna, the distribution utilities are relatively small scale and fragile. Moreover they are not intertied, and there is no way for the (future) Alaska power grid to strengthen its reliability or make sales of off-peak secondary energy.

Concluding Comment:

One of my chief concerns is that we do not deluge our client with information that is of questionable relevance to the decisions he has to make. That involves careful screening of all POS material. It also requires that the rationale of the financial and economic

..../5

Concluding Comment (continued)

chapters should be well-considered.

In editing for information, there is a danger that the underlying rationale (logic) of the Study may be filtered-out. That may not matter if it is then re-injected (e.g. in Chapter 2).

We covered a lot of ground in this work and I believe it provides a good foundation which could benefit APA, or other clients, at a later stage.

HDL:dn

February 27, 1981

0025

To JGW
From HDL.

Re Susitna
Concluding notes on Task II

① Scale: From the standpoint of APA we should try to keep the options open.

This suggests we should try to plan for 400 MW, even if subsequent events make it desirable to 'move-up' to 800 MW or 1200

NB It would be desirable to get APA to stipulate a 'security' guideline (e.g. answers the question "How big must the Railbelt peak reach before they agree to 800 MW — or 1,200 MW from Susitna?).

② Money rates and term

Funding is so far ahead, that our 10% provision seems adequate, (equivalent to say 12½% taxable).

Normally, one might predicate 15 years to 20 years term, or even longer. However: a) this is a new venture; b) the construction

period is effectively part of the term.

So I think 15 years is sufficiently long term to predicate.

③ Taxes: We might be required later to include some modest allowance in lieu of local taxes. (But we don't want to ask for it!).

④ Coverage/Equity

In principle, (this threshold aside) I don't believe we need substantial outside equity for public power projects.

Example: (per our conversation on this topic).

	% Capital	Rate	Amount
Debt	67	10	6.70
Equity	33	15	4.95
	100		11.65%

In this case the coverage (before tax of, say 50%, is 16.6 ÷ 6.7 = 2.48 times).

(ii) But half of the coverage goes to the tax collector. So perhaps the following is sufficient:

	% Capital	(% Capital)	%	Equivalent Return	Effective Return
Debt	67	(80.2)	10	6.70	(8.02)
Equity	16½	(19.8)	15	2.48	(2.97)
	83.5	100.0		9.18	(10.99)%

Coverage = 1.37 Time

(iii) The above makes no provision for the fact that commercial utilities customarily distribute 66% of earnings in dividends: So perhaps a public power utility can get by with

	Capital	% Capital	%	Equivalent	Effective
Debt	67	91.2	10	6.70	(9.12)
Equity	6.5	8.8	15	.98	(1.32)
	73.5	100.0		7.68	(10.44)%

Coverage = 1.14 time

(However, it should be recognized that REA is calling for a TIER — total interest earnings — of 1.5, or more, so we ought to talk in terms of 1.50 to 1.75)

4

(5) The 'Watana 400' package

Within a few mills, we know what this package might cost and what it would produce. We also believe that it would be good value, long term. (e.g. it compares favourably with a thermal alternative on a lifetime basis).

Where we have our problem is how to price it into the existing system.

So I think we need to know a whole lot more about the system pricing within the Railbelt utility networks.

Suggestion: What we need is specific and detailed information on pricing and consumption of electricity in the Railbelt (not general market or economic data).

Example: variations in per customer consumption
variations in load profiles;
variations between zones;
variations in rate schedule
elasticity data, etc.

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What is not yet evident, is:

(i) How sensitive is Alaskan electricity demand to changes in price?

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Note	Av. Price 1979	Av. Consn / Res Customer
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Fairbanks Mun	85.6 mills	5,870 kwhr.
U.S av. (1977)	39.2 mills	8,693 Kwh

Consumption profile. It should be recognized that while commercial load is substantial in the Railbelt, industrial load is relatively modest. Moreover in the 1972-77 period the 93% increase in Alaskan electricity sales conceals a 54% decline in industrial consumption for the State.

Elasticity: Study of articles by J. Hirshleifer, Lester Taylor and Mount, Chapman and Tyrell indicate that elasticity is in the range of -1.2 to -1.8 (Or -1 to -2, per the 1976 Battelle Study).

(7) Financial Integrity of Distributors

Relative to the scale and capital costs of Susitna, the distribution utilities are relatively small scale and fragile. Moreover they are not interties, and there is no way for the (future) Alaska power grid to strengthen its reliability ~~[illegible]~~ or make sales of off-peak secondary energy.

CONCLUDING COMMENT

One of my chief concerns is that we do not deluge our client with

information that is of questionable relevance to the Decisions he has to make. That involves careful screening of all POS material. It also requires that the rationale of the financial and economic chapters should be well-considered.

In editing for information, there is a danger that the underlying rationale (logic) of the Study may be filleted-out. That may not matter if it is then re-injected (e.g. in Chapter 2)

We covered a lot of ground in this work and I believe it provides a good foundation which could benefit APA, or other clients, at a later stage.

HDL

Feb 27/81

ACRES COLB

ACRES TOR

FEBRUARY 27, 1981 P5700.07

OUT
Feb 27/81

ATTN: P HOOVER/SON OMKAR

RE: SUSITNA TASK 11

REQUIRE FROM FERC FILINGS MADE BY ANCHORAGE MUNICIPAL POWER AND LIGHT, CHUGACH ELECTRIC ASSOCIATION INC, FAIRBANKS MUNICIPAL UTILITIES SYSTEM, GOLDEN VALLEY ELECTRIC ASSOCIATION INC. INFORMATION ON EACH UTILITIES LATEST BALANCE SHEET AND ANY RELEVANT NOTES OR SUPPORTING STATEMENT DEALING WITH BASIC OPERATING EXPENSES ETC. TOGETHER WITH THE RECORDS OF THE MOST RECENT YEAR ON RECORD RELATING TO ENERGY SALES BY CATEGORY AND SECTOR BREAKDOWN AND REVENUES EARNED IN RESPECT OF THESE SALES.

ALSO INTERESTED IN ANY INFORMATION THAT IS AVAILABLE CONCERNING PROPORTIONAL ENERGY DELIVERIES FROM VARIOUS MODE OF GENERATION AND IMPORTS EMPLOYED IN MEETING SYSTEM SALES OF CAPACITY AND/OR ENERGY.

THUS DATA REQUIRED TO ASSIST IN CONSTRUCTING PROFILES OF EACH MAJOR UTILITY LIKELY TO BE SERVED BY SUSITNA OUTPUT.

YOU MAY CHARGE UP TO 10 HOURS TO P5700.11.02002 FOR THIS INVESTIGATION.

J G WARNOCK
ACRES TORONTO

ACRES TOR

FEBRUARY 27, 1981 P5700.11PD902

TO: J. LAWRENCE, ACRES BUFFALO

OUT
Feb 27/81

RE: SUSITNA TASK 11

RECEIVED YOUR TWO TELEXES 2-26-81 AND COPIES MEMORANDA FEBRUARY 23 AND 24 SIMULTANEOUSLY TODAY.

REGARDING YOUR QUESTIONS RE TELEX JANUARY 14:

1. NO CONFIRMATION OF RECEIPT AND ONWARD TRANSMITTAL EXPECTED NOR RECEIVED FROM J. GILL AS ROUTING OF RESPONSE TO APA MORE OR LESS ROUTINE.

2. NO RESPONSE RECEIVED NOR NECESSARILY EXPECTED FROM APA AS WE WERE ALREADY DUE TO MEET THEM ON 20TH AT WHICH TIME OR ON SUCCEEDING DAYS THERE WAS NO FURTHER DISCUSSION OF MATTER. SUGGEST THIS INDICATES THAT OUR EXPLANATION HAD BEEN ACCEPTED.

IN SELECTING CONSULTANTS TO BACK UP OUR WORK ON FINANCING CONSIDERATION AND ANALYSIS IN ABSENCE OF SALAMON BROS., WE HAVE SELECTED TALENTED SPECIALISTS KNOWN TO US WITH PROVEN RECORDS ON SUCH JOBS AS CHURCHILL FALLS WHICH YOU WILL RECALL WAS PRINCIPAL PAST EXPERIENCE USED IN JUSTIFYING OUR P.O.S. PRESENTATION ON THIS ISSUE. THERE IS SURELY NO CONTRACTUAL REQUIREMENT WHICH PRECLUDES US USING NON-AMERICAN SPECIALISTS PROVIDING THEY HAVE PROPER TALENT AND CAPABILITY WHICH I BELIEVE IS NOT IN QUESTION AT THIS TIME.

PRIOR TO RECEIPT YOUR TELEXES 2-26-81, HAD DISCUSSED WITH

T. MCGUIDE THE EXCHANGE WITH HIM OF FIVE PAGE STATEMENT APA INTEND TO USE FOR STATE OF ALASKA SUBMISSION WHICH IS VERY GENERAL IN REGARD TO FINANCING ISSUE AND OF A SUMMARY. WE HAVE BEEN PREPARING THIS WEEK OF THE FINDINGS TO DATE ON TASK 11 BASED ON FINANCIAL MODELLING AND OTHER DELIVERATIONS FOR APA GUIDANCE IN CONSIDERING IMPLICATIONS OF CERTAIN FINANCING ISSUES. AGREED THIS EXCHANGE WOULD PROCEED WITHIN NEXT WEEK OR SO. IN VIEW OF YOUR INSTRUCTION WE SHALL COMPLETE ASAP THIS WORK WHICH INCIDENTALLY HAS INVOLVED LIMITED SENSITIVITY RUNS OF FINANCIAL MODEL AND THEN CLOSE FURTHER TASK 11 OPERATIONS OTHER THAN EDITORIAL INPUT TO P.O.R. UNTIL FURTHER ADVISED. WOULD RECOMMEND THAT IN EARLY MARCH WE AT LEAST SCHEDULE REVIEW MEETING WITH A. J. MERRETT AND THIS MIGHT WELL BE PLANNED FOR TUESDAY 3RD IN COLUMBIA WHERE TASK 6 OGP-5 GROUP COULD BE INVOLVED IN ORDER THEY AWARE ALSO OF IMPLICATIONS OF FINANCING CONSTRAINTS. WOULD THIS SUIT YOU OR DO YOU HAVE PREFERRED ALTERNATIVE.

FOR YOUR GUIDANCE I BELIEVE THAT TASK 11 EXPENDITURES APPROXIMATELY ON THE SCHEDULE ANTICIPATED IN APRIL 1980 DESPITE THE FACT THIS TASK IS HAVING TO CARRY HEAVIER BURDEN THAN PLANNED OF CHARGES FROM OTHER TASKS FOR POR PREPARATION.

CONCERNED TO LEARN OF FUNDING PROBLEMS AND PARTICULARLY SO AT SUCH A LATE DATE AS BELIEVE REVIEW PANEL OUGHT TO HAVE BEEN AWARE OF ANY LIMITATIONS TO ACRES EFFORT WHICH THIS MIGHT IMPOSE. SUGGEST MATTER BE DISCUSSED AT REVIEW MEETING 3-5-81.

REGARDS

J. G. WARNOCK

ACRES AHG

ACRES TOR

FEBRUARY 26, 1981 P5700.11PD902

OUT
Feb 26/81

TO: J. LAWRENCE, ACRES CANCHORAGE

RE: SUSITNA TASK II

RECEIVED YOUR TWO TELEXES 2-26-81 AND COPIES MEMORANDA FEBRUARY 23 AND 24 SIMULTANEOUSLY TODAY.

REGARDING YOUR QUESTIONS RE TELEX JANUARY 14:

1. NO CONFIRMATION OF RECEIPT AND ONWARD TRANSMITTAL EXPECTED NOR RECEIVED FROM J. GILL AS ROUTING OF RESPONSE TO APA MORE OR LESS ROUTINE.

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IN SELECTING CONSULTANTS TO BACK UP OUR WORK ON FINANCING CONSIDERATION AND ANALYSIS IN ABSENCE OF SALAMON BROS., WE HAVE SELECTED TALENTED SPECIALISTS KNOWN TO US WITH PROVEN RECORDS ON SUCH JOBS AS CHURCHILL FALLS WHICH YOU WILL RECALL WAS PRINCIPAL PAST EXPERIENCE USED IN JUSTIFYING OUR P.O.S. PRESENTATION ON THIS ISSUE. THERE IS SURELY NO CONTRACTUAL REQUIREMENT WHICH PRECLUDES US USING NON-AMERICAN SPECIALISTS PROVIDING THEY HAVE PROPER TALENT AND CAPABILITY WHICH I BELIEVE IS NOT IN QUESTION AT THIS TIME.

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GUIDANCE IN CONSIDERING IMPLICATIONS OF CERTAIN FINANCING ISSUES. AGREED THIS EXCHANGE WOULD PROCEED WITHIN NEXT WEEK OR SO. IN VIEW OF YOUR INSTRUCTION WE SHALL COMPLETE ASAP THIS WIRK WHICH INCIDENTALLY HAS INVOLVED LIMITED SENSITIVITY RUNS OF FINANCIAL MODEL AND THEN CLOSE FURTHER TASK 11 OPERATIONS OTHER THAN EDITORIAL INPUT TO P.O.R. UNTIL FURTHER ADVISED. WOULD RECOMMEND THAT IN EARLY MARCH WE AT LEAST SCHEDULE REVIEW MEETING WITH A. J. MERRETT AND THIS MIGHT WELL BE PLANNED FOR TUESDAY 3RD IN COLUMBIA WHERE TASK 6 OGP-5 GROUP COULD BE INVOLVED IN ORDER THEY AWARE ALSO OF IMPLICATIONS OF FINANCING CONSTRAINTS. WOULD THIS SUIT YOU OR DO YOU HAVE PREFERRED ALTERNATIVE.

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REGARDS

J.G. WARNOCK

ACRES AHG

ACRES TOR

ACRES BUF

2-26-81

ACRES TOR

ATTN: G. WARNOCK

BT

In
Feb 26/81

IN A TELEPHONE CONVERSATION FEBRUARY 25 TERRY MCGUIRE CONFIRMED HIS INSTRUCTIONS TO ACRES IN WASHINGTON FEBRUARY 4 AS FOLLOWS:

1. COMPLETE AND ISSUE THE 1981 VERSION OF POR AS SCHEDULED.

2. APA WILL DECIDE THIS WEEK IF IT IS APPROPRIATE FOR FINANCIAL CHAPTERS TO BE INCLUDED IN POR.

3. FURTHER FINANCIAL MODEL RUNS SHOULD NOT BE MADE PENDING APA REVIEW OF POR, AN INDICATION OF STATE POLICY ON SUSITNA CONSTRUCTION AND FUNDING, AND UNDERWRITERS INPUT TO APA ON REQUIRED ANALYSES.

MCGUIRE ADDED HIS CONCERN THAT THE ACRES MODEL IS MORE APPROPRIATE FOR CORPORATE FINANCING THAN STATE OR PUBLIC FINANCING. HE BELIEVES THE MODEL CAN BE SIMPLIFIED AND ANTICIPATES ADVICE ON THIS FROM THE UNDERWRITERS.

YOU SHOULD ALSO BE AWARE THAT CURRENT FUNDING COULD WELL BE EXHAUSTED BEFORE APRIL 1, AT CURRENT RATES OF EXPENDITURE. ADDITIONAL FUNDING HAS BEEN REQUESTED BY APA BEFORE APRIL 1, BUT IF NOT AUTHORIZED, WORK MAY HAVE TO BE STOPPED. IT IS CLEARLY IMPORTANT TO LIMIT ALL BUT MOST ESSENTIAL WORK IN MARCH. TASK 11 WORK AT THIS TIME IS NOT APPROPRIATE AND MAY EVEN BE DENIED PAYMENT BY MCGUIRE.

REGARDS,

J. LAWRENCE+

ACRES TOR

ACRES TOR

FEBRUARY 24, 1981 P5700.11

CC: H. D. LEACH
T. MERRETT
M. WALTON

Oct
Feb-24/81

ATTN: PHIL HOOVER

RE: SUSITNA P5700.07.11

AS EXPLAINED IN TELCON WE ARE ENDEAVOURING TO RECONSTRUCT ON A FINANCING MODEL BASIS THE LITERAL CASH FLOWS CORRESPONDING TO YOUR OGP5 RUNS AT 0 O/O AND 3 O/O AND CORRESPONDING TO THE DATA PROVIDED FOR LME 1 AND L8J9 ALSO LATER BUT SOONEST POSSIBLE FOR WATANA 400 MW ONLY. WE REQUIRE FOR EACH PLANT SELECTED ONE BY ONE AS SOON AS AVAILABLE FOR TELECOPIER TRANSMISSION.

CAPITAL COSTS IN DOLLAR TOTAL VALUES INCLUDING AS SEPARATE ITEMS WORKING CAPITAL AND INVENTORY.

EXPENDITURE/TIMING PROFILES FOR CAPITAL COSTS INPUTS USED TO COMPUTE IDC.

ENERGY OUTPUT YEAR BY YEAR (AND FOR LATER COMPARISON THE ANNUAL MILL RATES OGP5 PRODUCED).

OPERATING AND MAINTENANCE CASH FUEL COSTS.

ABOVE DATA REQUIRED FOR EACH OF PLANT ALTERNATIVES SELECTED BY OGP5 1981 THROUGH 2010 AND ALSO O + M AND FUEL COSTS FOR ALREADY INSTALLED PLANTS. DATA CAN BE PROVIDED IN MOST CONVENIENT FORM DEFINING FOR INSTANCE IN FORM BASE YEAR VALUES PLUS ANNUAL TRENDS IN PERCENTAGE.

OUR PLAN IS TO CARRY OUT FINANCIAL ANALYSES TO DETERMINE PRICING/ REVENUE STREAMS APPLICABLE TO ALL THERMAL AND WITH CHACACHAMMA ALTERNATIVES AND TO DETERMINE DEFICITS WHICH ARISE FOR WATANA OPTIONS IF THEY MATCH THESE STREAMS. ANXIOUS TO HAVE THESE RUNS CORRESPOND AS CLOSELY AS POSSIBLE TO YOUR OGP5 RUNS. IF YOU FEEL ANY OTHER DATA YOU HAVE IS RELEVANT PLEASE ADVISE.

NEW SUBJECT

PLEASE ADVISE WHETHER IN TESTING FOR VARIOUS DISCOUNT RATES 5 O/O AND 9 O/O THESE SAME RATES WERE USED IN DETERMINING ANNUAL CHARGES IN PLACE OF THE 3 O/O AS USED IN BASE CASE.

PLEASE COMMUNICATE WITH H. D. LEACH OR A. J. MERRETT AT TORONTO OFFICE AT 416-595-2050.

CHARGE TIME TO P5700.11.02001

REGARDS

J G WARNOCK

ACRES BUF

ACRES TOR

FEBRUARY 24, 1981 P5700.07.11

ATTN: J. D. LAWRENCE

OCT
Feb 24/81

THIS IS A COPY OF THE TELEX TRANSMITTED TO J. GILL BY ME ON JANUARY 14/81.

SUSITNA - FOR TRANSMITTAL TO APA-R MOHN/T MCGUIRE/G MANNI CONSULTANTS

APA HAVE REQUESTED US TO PROVIDE STATEMENTS AND/OR OPINIONS FOR CONSULTANTS DR C B CHAPMAN AND PROFESSOR A J MERRETT BOTH EMPLOYED TO PROVIDE INPUT TO CHAPTER 11 OR RISK ANALYSIS/FINANCIAL ANALYSIS AND FINANCIAL PLANNING/ ANALYSIS RESPECTIVELY. BOTH CHAPMAN AND MERRETT HAVE TO DATE PARTICIPATED DIRECTLY IN OUR TASK STUDY TEAM PROVIDING CONCEPTUAL INPUT BOTH TO THE MODELLING APPROACHES AND TO ALTERNATIVE MODES OF FINANCING. UNLIKE OTHER EXTERNAL CONSULTANTS CHAPMAN AND MERRETT WILL NOT BE PROVIDING OVERVIEW OF OPINION SO MUCH AS A DIRECT CONTRIBUTION TO AND REVIEW OF OUR WORK. THESE CONTRIBUTIONS WILL MAINLY BE EMBEDDED IN THE REPORTS AND OTHER ELEMENTS OF OUR TASK II OUTPUT. AT AN APPROPRIATE STAGE OF THE WORK POSSIBLY AT THE CONCLUSION OF THE FIRST DRAFT POR WE COULD ARRANGE FOR EACH CONSULTANT TO PREPARE A FORMAL OVERVIEW FOR APA CONSIDERATION. THE CONSULTANTS WOULD HOWEVER BE REVIEWING WORK TO WHICH THEY HAD MADE A SUBSTANTIAL PERSONAL CONTRIBUTION. IN ADDITION TO DR CHAPMAN AND PROFESSOR MERRETT WE HAVE

EMPLOYEE H DERRICK LEACH WHO IS A HIGHLY QUALIFIED FINANCIAL ANALYST TO FORMULATE AND ANALYSE THE MODELS WE HAVE ALREADY PROCESSED DEPICTING SEVERAL ALTERNATIVE FINANCING PLANS FOR SUSITNA. MR LEACH IS CO-AUTHOR WITH ME OF MUCH OF THE INPUT FOR CHAPTER 13, 16 AND 17 NOW DUE FOR TABLING ON JANUARY 20 FOR DISCUSSION WITH APA PRIOR TO ISSUE IN FINAL DRAFT FORM. DERRICK LEACH AND IF FELT DESIRABLE PROFESSOR TONY MERRETT CAN BE AVAILABLE FOR LATER DISCUSSIONS WITH APA AND FINANCIAL ADVISORS AND I WOULD RECOMMEND THAT THEIR KNOWLEDGE AND EXPERIENCE BE BROUGHT TO BEAR STRONGLY IN THIS FASHION. IN ORDER TO IDENTIFY ALL EXTERNAL INPUTS AT THIS TIME WE ADVISE THAT FEZIBL PROGRAM BEING USED AS BASIS FOR FINANCIAL MODELS IS BEING ADAPTED, INPUTTED AND ANALYSED FOR MS MARGARET WALTON OF KEEPING AND WALTON ASSOCIATES, COMPUTER AIDED FINANCIAL ANALYSIS SPECIALISTS. SAMPLE PROGRAMS OUTPUT WILL BE TABLED ON JANUARY 20TH 1981. TRUST THAT THIS TELEX WILL FILL NEED FOR PROMPT ADVICE TO QUERIES RAISED INITIALLY FROM GLORIA MANNI'S REVIEW OF ACRES INVOICES. WILL BE PLEASED TO SUPPLY ANY FURTHER INFORMATION REQUIRED.

J G WARNOCK

ACRES - TORONTO

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ACRES BUF

ACRES TOR

ACRES COLF

ACRES TOR

FEBRUARY 24, 1981 P5700.11

CC: H. D. LEACH
T. MERRETT
M. WALTON

Out
Feb-24/81

ATTN: PHIL HOOVER

RE: SUSITNA P5700.11

AS EXPLAINED IN TELCON WE ARE ENDEAVOURING TO RECONSTRUCT ON A FINANCING MODEL BASIS THE LITERAL CASH FLOWS CORRESPONDING TO YOUR OGP5 RUNS AT 0 0/0 AND 3 0/0 AND CORRESPONDING TO THE DATA PROVIDED FOR LME 1 AND L8J9 ALSO LATER BUT SOONEST POSSIBLE FOR WATANA 400 MW ONLY. WE REQUIRE FOR EACH PLANT SELECTED ONE BY ONE AS SOON AS AVAILABLE FOR TELECOPIER TRANSMISSION.

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CHARGE TIME TO P5700.11.02001

REGARDS

J G WARNOCK

ACRES - TORONTO

+

ACRES COLB

ACRES TOR

OFFICE MEMORANDUM

:	Memo to File	*Date:*	February 5, 1981
		File:	P5700.07.11
FROM:	J. G. Warnock	*cc:*	A. J. Merrett
SUBJECT:	SUSITNA - HYDROELECTRIC PROJECT TASK 11 - FINANCING AND MARKETING MEETING WITH MANAGING UNDERWRITERS AND FINANCIAL ADVISORS		

We have now concluded two meetings attended by Alaska Power Authority, their financial advisors First Southwest Corporation and First Boston Corporation as Managing Underwriters. At the conclusion of the meetings Terry McGuire, Director of Finance for APA reiterated that Acres role on Financing and Marketing would continue as before and that he expected that we would be expected to gradually build a strengthening relationship with First Boston. He advised me privately that he expected that we would "stay ahead" of First Boston in the area of conceptual ideas on financing for some time and that he did not feel that the managing underwriters would be too aggressive in their attempts to take over the lead.

McGuire also told First Boston during the meeting that the main source of innovative financing approaches so far had been Acres American and, he obviously declared his support for the effort we have contributed to date.

The situation in general however is fraught with considerable difficulty as it is clear that the State government is taking matters into its own hands in relation to current hydroelectric projects which may lead to legislation which would not necessarily favour support for Susitna. APA do not appear to be too concerned, believing that they can still manage the outcome to meet their long term interests.

Acres went into the meetings with serious concern of specific approaches to financing and the lack of cohesive argument in the draft chapters 13, 16 and 17 of the P.O.R. would receive adverse comment. Not so!

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Memo to File

February 5, 1981
P5700.07.11

First Boston admitted to the fact that they had been unable to get full appreciation of the issues from our chapters, but felt that this was due to their general unfamiliarity with the project. Acres spend February 4th giving them a full briefing on the technical aspects and they are now much better informed. APA are of the opinion that anything written on the financing aspects of the project for publication at this time should not be too specific and, if they have any criticism, it was that we had presented too much of our current ideas too early in the draft chapters.

The opportunity is before us, then, to suggest major revision and editting as well as the preparation of better linkage with the economic feasibility chapters. We have advised APA that we shall, for the time being, cease modelling and turn attention to the text.

McGuire gave First Boston a positive appreciation of our financing modelling work and recommended that serious consideration be given to following through with the application of FEZIBL to all future analysis. There did not appear to be any strong offer of an alternative from First Boston who want to arrange meetings to get a better feel for the programs capability. Nothing was released to them at this time.

APA have provided Acres with some flexibility in an attempt to make further improvement in written analysis of the financing issue to date. There is some thought of expurgating any discussion of financing which might be judged too specific in the early edition of the project overview pending the State's announcement of its hydroelectric project financing support plan. This may not be settled until June/July 1981. This would relieve the pressure on finalisation of a 1981 position and give us time to advance our ideas to a better consolidated level.

During the discussion the equity/debt situation came up. While First Boston were generally in agreement with our assumption that equity was a desirable if not key ingredient, particularly at this preliminary stage, they asserted that it was not essential that it be there initially. They possibly are thinking in terms of

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Memo to File

February 5, 1981
P5700.07.11

strong State support in the form of backing or guarantee.

The presentation to First Boston followed a previous days meeting when there was a general discussion with a diversified group of hydroelectric development interests seeking improvement in IRS regulations permitting wider availability of tax exempt bond financing. A copy of the record of the meetings and participants is attached (as issued by First Boston Corporation).

JGW:dn

OFFICE MEMORANDUM

J. D. Lawrence

Date: February 16, 1981

File: P5700.07.11

FROM: J. G. Warnock

cc: C. A. Debelius

SUBJECT: TASK 11
MARKETING & FINANCING

We attach one xerox copy of each of the computer outputs applying to the following "runs" as referred to in our letter to APA of January 22nd.

Run	06	Run	6E
Run	6A	Run	6F
Run	6D	Run	6G
Run	6Z		

JGW:dn
Enclosure

Not Sent

February 3, 1981

Mr. Eric P. Yould, Executive Director
Alaska Power Authority
333 W. 4th Avenue, Suite 31
Anchorage, AK 99501

Dear Eric:

Susitna Hydroelectric Project
Task 11: Marketing and Financing

During the past two weeks we have furnished you with samples of financial analyses based on a range of models which might be considered for Susitna Hydroelectric Project. We are about to engage in discussions with the managing underwriting group and your financial advisors, and it is therefore appropriate to give you our provisional conclusions and to seek your views on how best we might proceed to develop these to the best advantage of the Authority.

First, the best way to sum up our preliminary conclusions on economic and financial viability is in the two tables set out on the attached page, one for real and one for money DCF rates of return for a range of outcomes. This is another way of setting out the information already supplied to you at the time of the external consultants review meeting (see the attachment for the complementary B/C ratios), but in a way it is more useful in assessing financability. It is, in any case, what bankers expect and need. These DCF returns represent total cost savings from Susitna compared with the next most efficient energy sources. Adverse criticism is possible if capital costs are substantially higher than assumed and if alternative enrgy costs fail to rise as forecast. Our present view is that these risks are more than counterbalanced by the gains which would arise if alternative energy costs rose even faster than assumed; i.e., at a rate of 5% or more in real terms. Then Susitna would be an important insurance to Alaska against major energy cost escalations in future.

We have discussed with you various financing approaches which could involve funding support from the State of Alaska. The DCF rates of return are a most important measure of the value of such participation. How the Alaskan government would distribute the benefits from the project is, of course, a policy matter. If the money rate of return is 15-16%, the State may choose to take only half, permitting APA to pass on the benefit of the remainder in lower prices. No decision on such a split is needed now, but you will no doubt wish to develop the concept as the most effective way of presenting Susitna's ad-

vantages to the legislature and the public.

Second, we would emphasize the extent to which Susitna offers significant automatic compensation against one of its major risks, namely markedly greater inflation either worldwide or specifically in Alaska. While this would add to Susitna's direct capital cost and interest burden, it could be offset by the likely resultant increased cost of alternative energy sources.

Third, when considering the financing question, we feel it is inadvisable to pursue any single or rigid financing plan which could be overtaken by events prior to a final commitment decision. For instance, any scheme involving high and fixed levels of debt would be vulnerable to major increases in interest rates. It seems sensible, therefore, to keep all options open. But if one option has to be accepted at this time, the royalty basis looks to offer maximum flexibility against unforeseen events.

Fourth, we would like to bring up the question of completion guarantees. This will be raised by the underwriters at some stage, since some form of guarantee will be a precondition of third party debt. Accordingly, it is advisable to have a well considered view ready. The royalty route appears to be the best means of rewarding the Alaska government for providing such a guarantee.

Finally, we must consider the range of information to be provided. It seems that the project is sufficiently robust to withstand the hazards and difficulties which its magnitude inescapably involves. By stating these frankly throughout, we can best prepare to minimize adversity and to avoid criticisms that such possibilities were suppressed in the presentation.

We are in the process of revising the draft Chapter 16 - Financial Analysis, and will have this week the benefit of further input from First Southwest Corporation and First Boston. The revised draft will be available for further consideration during your forthcoming visit to Buffalo, and we shall plan to get copies to you earlier if possible.

Yours sincerely,

J. Gavin Warnock

ACRES AMERICAN INCORPORATED

ECONOMIC DCF RATES OF RETURN IN %
FOR
*ANNUAL ALTERNATIVE ENERGY PRICE ESCALATION
RATES (INCREASES IN EXCESS OF GENERAL INFLATION)

CAPITAL COSTS	0%	1.5%	3.0%	5.0%	7.0%	Compare B/C Ratio at 3% Rate
			IN REAL TERMS			
BASE CAPITAL COST ESTIMATE	6.1	7.1	8.0	9.4	10.7	2.1
+15% on Estimate	5.2	6.7	7.1	8.4	9.7	
+30% on Estimate	4.5	5.4	6.35	7.6	8.8	
			IN MONEY TERMS			
BASE CAPITAL COST ESTIMATE	13.5	14.5	15.6	17.0	18.4	2.1
+15% on Estimate	12.6	13.6	14.6	16.0	17.3	
+30% on Estimate	11.8	12.8	13.8	15.1	16.4	

*These rates assumed to apply from 1993, date of first power output from Susitna to 2005, with energy price increases following general inflation rate thereafter.

MEMORANDUM

TO: J. Gavin Warnock

January 29, 1981

FR: A. J. Merrett/A. Sykes

RE: ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
TASK II, MARKETING & FINANCING

FINANCIAL FEASIBILITY ANALYSIS

Introduction

The purpose of the Financial Feasibility Analysis is to evaluate the financial viability of Susitna over ranges of outcomes for capital cost, demand, prices, which are judged at this stage to have a significant probability of occurrence. It will not be possible at this stage, however, to evaluate such viability in terms of probabalistic models assigning or estimating the specific probabilities. It will similarly not be possible to consider optimisation of Susitna with respect to alternative engineering and financing schemes. This will only be practicable at a later stage when the range of financing options is more specifically defined and outcomes have been considered more fully. It must also be stressed that the Financial Feasibility, coming as it does at the end of the sequence of data, estimates and policy inputs cannot be carried to a completely definitive state until nearer the actual inception of the project. Rather, it must be in a continual state of review and refinement as with the continuing flow of data and policy inputs.

As the first and therefore earliest review of Financial Feasibility this must be the most tentative and we will be concerned not to take the analysis and conclusion beyond the point justified by the present stage of estimation and policy development.

Economic Viability

Economic viability of the project is a pre-condition of financial viability through conventional financing sources. It should also represent (in the absence of any policy to subsidise uneconomic sources of power) the pre-condition for interest and involvement of the State of Alaska. In such purely economic analysis we are not concerned to take cognisance of the accounting debt cover, expenditure phasing constraints relevant to financing the project. The economic return in effect measures the economic benefit assuming that all such benefits are capable of being captured by the owners of the project.

The basis of this economic return is the cost saving to users of Susitna power which would result from their having access to Susitna power rather than the next most economic source.

To describe the origin of this economic return it is necessary briefly to recapitalate the marketing scenario and the expected capacity displacement which will result. This is done on the following estimates and assumptions.

(i) It is assumed that the volume of demand will lie in the range of the ISER forecasts.

(ii) When Susitna comes on stream in say 1993 it will pursue a marketing policy such that it displaces existing generating capacity equal to the increments of Susitna power being brought in.

(iii) The producers of alternative energy will have planned for this eventuality and will be ready to purchase Susitna power at a price equal to the best alternative non-Susitna sources. (This is estimated to be the cost of natural gas? some combination of natural gas and coal? - or?)

(iv) Susitna's prices in subsequent years could escalate in line with the next most economic source of power available to its customers. For reasons of public policy Susitna may not choose to capture the full cost saving compared with alternative power sources, but for the purposes of calculating the full economic return the full possible cost savings must be used. This is because these cost savings represent the maximum customers would be prepared to pay: thus it measures the full economic benefit from Susitna, and sets the upper limit to what is available to meet financing charges.

(Memo on point to be included in marketing section: As soon as Susitna is seen to be likely from a certain expected future date, e.g., 1993, existing producers of electricity will take this into account in their renewal and expansion plans. The more certain Susitna is seen to be, particularly if it is perceived as providing relatively cheap power, the less the threat existing generating capacity will pose to depressing the entry price for Susitna power. Existing producers will patch up existing capacity accepting the higher running costs involved, and will defer and, in the limit, cancel expansion plans. Nevertheless, a transitional period of competition from some existing plant must be expected. It is necessary to estimate the amount of power involved, its displacement cost, and for how long this displacement cost will affect the price existing producers will pay for Susitna power.)

(v) All other relevant estimates and assumptions on capital and operating costs, inflation, peak power availability, etc.

The two main parameters to be considered are:

(a) Build up of demand (volume and price)

(b) Real capital and operating costs (on assumption that inflation will increase costs of alternative energy equally and thus be neutral).

ASJ/AS:ic

ACRES

OFFICE MEMORANDUM

TO: H.D. Leach

FROM: D. Crawford

SUBJECT: Susitna HEP
Hydrological Cycles and Their Effects on Energy Output

Date: January 28, 1981

File: P5700.07.06

In your memo dated January 23, 1981 to J.G. Warnock you suggested that energy output from the various Susitna schemes could be described by a "cos" curve. The basis of your suggestion was that hydrological phenomena also vary in a cyclic and predictable manner.

The majority of hydrologic phenomena in nature are stochastic, that is, they are governed by the laws of chance. Precipitation, temperature, lake levels, snow and ice accumulation and runoff are all stochastic process and so cannot be described by a simple deterministic "cos" curve.

Figure 1 shows the annual energy plotted against time for the full development at Watana. The annual energy produced is both a function of the inflow and the reservoir storage capacity.

Consequently, we would not recommend an approach whereby energy output or plant factors follow a "cos" curve. We would suggest that for assessing operating risks a probability concept be developed whereby the energy associated with a given chance of occurring is assumed (Figure 2 for example).

Annual energy for single development at Watana and the development at Watana and Devil Canyon are given in Table 1 for your reference.

David Crawford

D. Crawford

I.P.G. Hutchison
Task 6 Supervisor

DC:ccv

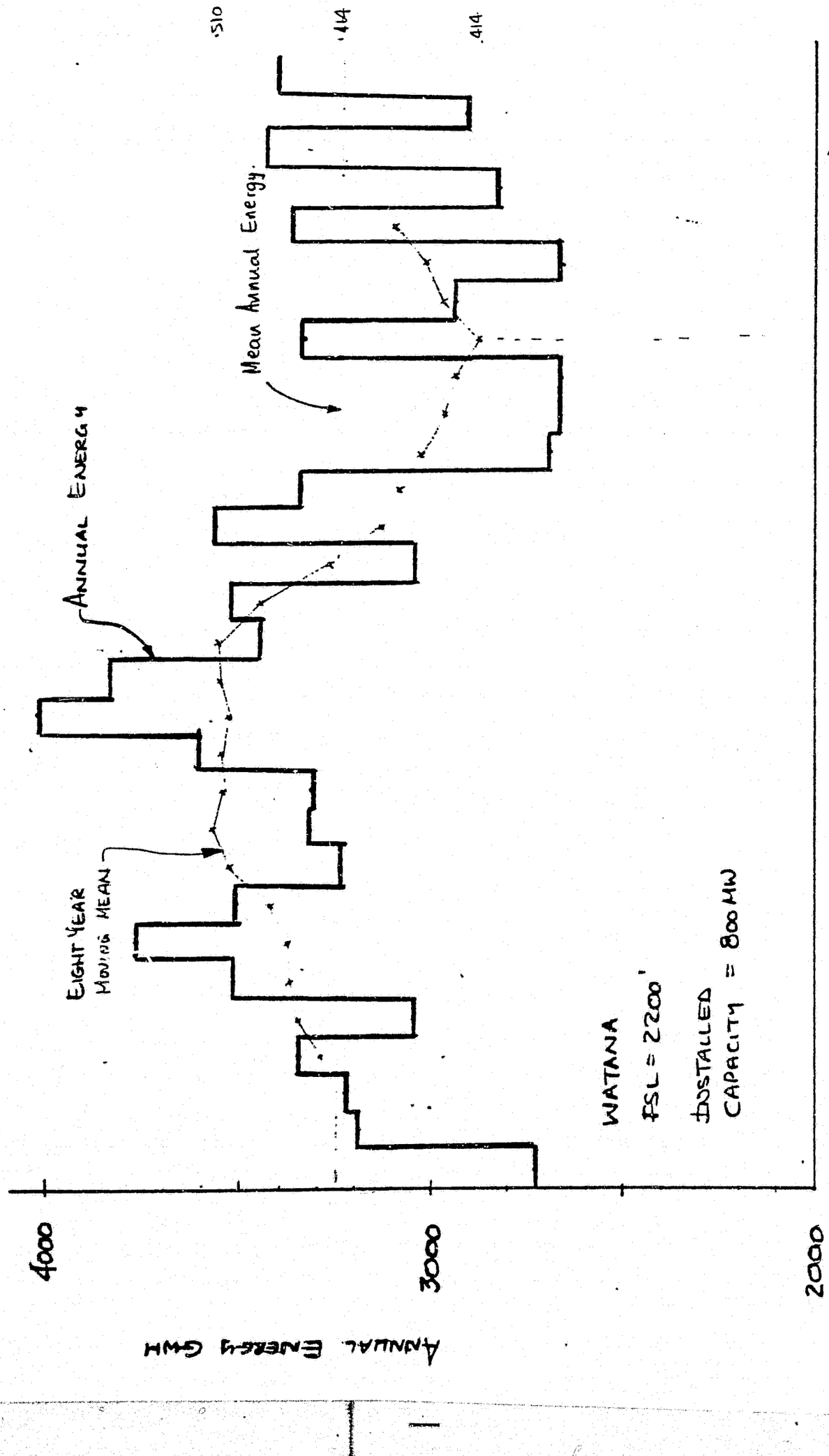
FIGURE 1

ACRES

Calculations

SUBJECT:

JOB NUMBER P5700-06-06
FILE NUMBER
SHEET OF
BY DC DATE 27 Jan 81.
APP DATE



FORM NO. 152 REV. 1

K&E PROBABILITY X 90 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 8000

% EXCELLENCE

99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01

ANNUAL ENERGY

4000
3000
2000

0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.8 99.9 99.99

ANNUAL PROBABILITY %

2.5%

5% Chance of not getting energy.

FIGURE 2

ANNUAL ENERGY VS PROBABILITY OF EXCELLENCE

N = 30

DC 27 Jan 81

FIGURE 2

TABLE 1

ACRES **Calculations**

SUBJECT:

JOB NUMBER PS-0056.06.
FILE NUMBER
SHEET OF
BY DC DATE 27Jan81
APP DATE

TABLE 1

WATANA / DEVIL CANYON ENERGY SIMULATIONS.

ANNUAL ENERGY GWH

YEAR	SINGLE WATANA	WATANA + DEVIL CANYON		
	FSL = 2200 800 MW	FSL = 2200 800 MW	FSL = 1450 400 MW.	TOTAL
1	2731	2809	2648	5456
2	3196	2941	2782	5723
3	3235	3164	3005	6169
4	3362	3294	3150	6444
5	3057	2989	2981	5971
6	3518	3566	3272	6838
7	3775	3711	3578	7288
8	3505	3434	3260	6694
9	3247	3194	2993	6187
10	3314	3232	3239	6471
11	3309	3236	3051	6286
12	3610	3550	3378	6928
13	4028	4080	3703	7784
14	3854	3822	3514	7336
15	3461	3399	3133	6532
16	3527	3454	3217	6671
17	3063	2996	2931	5926
18	3518	3721	3526	7247
19	3352	3292	3095	6387
20	2669	2795	2514	5309
21	2671	2689	2792	5481
22	2669	2330	2425	4754
23	3260	3096	3039	6135
24	2942	2875	2604	5479
25	2676	2801	2642	5443
26	3379	3067	2999	6065
27	2815	2813	2637	5449
28	3435	3297	3139	6435
29	2909	2844	2609	5454
30	3403	3342	2939	6381

FORM NO. 152 REV. 1

M E M O R A N D U M

TO: J. Gavin Warnock

January 22, 1981

FR: H. Derrick Leach

RE: TELEX QUERY OF JANUARY 20/81
(RECEIVED JANUARY 21/81)--
(ALTERNATIVE FINANCING)

Starting from Data 6D in Job 3737, we made a series of attempts to create a model paying 12 per cent interest on the State contribution, with interest rolled-in, and amortized over 40 years.

We are now telecopying you summarized data on three examples (best of a number of runs).

Model 6E — Retires senior debt by Year 22 (2007). Thereafter services $10.7 billion of State contribution (two loans of 40 years' each--expiring Years 2046 and 2047).

Model 6F — Retires Watana and DC in Year 28 (2013); but starts to service the State contribution in a more modest way starting in Year 14 (1999). State is fully-paid (including rolled-up interest) by Year 38 (2023).

Model 6G — Same as 6F but paying 10 per cent to the State. This pays out by Year 31 (2016).

Comments on 6E; 6F; 6G

6E - is an adaptation of 6D. Line 274 has been added. This capitalizes the interest on the infrastructure loan (273). To Year 13 (1998), revenues are the same. However, price escalation at 3.5 per cent is continued for all years. Senior debt is 10 per cent; State financing 12 per cent.

You will note that the Watana and DC loans are paid-off as fast as possible (Years 10 and 12). But even with full cash flow, the impact of the 40-year State financing is to "collapse" Susitna's earnings in Year 13 and subsequently. Overall DCF return to 2014 is 9.65 per cent. Returns for regulatory purposes are low.

6F - This has the same revenue line as 6E. Watana and DC are level payment financings phased to retire both loans by Year 28 (10 per cent on senior debt).

The Infrastructure loan (3) is Dam expenditure only (excluding capitalized interest). Model starts to service this 12 per cent State contribution in Year 14 (1999). It is retired by Year 28 (2013).

Capint Loan 2 is the capitalized interest on the infrastructure to 1998, with further accruals on (unpaid) interest rolled-in. It pays off by Year 38, on a full-payment basis.

N. B. Both Loans 3 and 4 are full payment, so there is no cash available for Rate Stabilization until Year 38.

You will notice that drawdowns on Loan 4 continue after capital payments have commenced. That is because heavy interest charges exceed cash available to service the State Contribution at 12 per cent.

Pending redemption of the two senior debt issues, all interest on Loan 4 is capitalized.

The DCF return is 11.31 per cent; return on investment in real terms (e.g., 1980 dollars constant) is 4.03 per cent. The returns for regulatory purposes have been constrained at a modest level. Interest coverage is low, but steady. Ratios of senior debt to total capital seem to be acceptable right from the start. Negative earnings in Years 14/15/16 and 29 are not material.

We feel 6F is a good model on these parameters. In real terms, revenue per kWh declines every year--so that affords APA a "buffer" against unforseen contingencies.

6G - This is equivalent to 6F, with 10 per cent financing on the State contribution. You will notice that the subordinate debt is paid off by Year 31 (2016). This is partly because we are able to start servicing the State contributions (Loan 4) one year earlier. You will note that debt drawdowns on the Sources statement for Years 20 to 30 (e.g., 2006 - 2013) are appreciably lower than 6F, and Total Debt outstanding in Years 16 and 17 (2001/2002) is over $1 billion lower.

DCF return to Year 34 is 10.74 per cent. Real return is 3.5 per cent. Regulatory returns are appreciably higher than 6F and there are no deficit years after Devil Canyon comes on line.

Margaret Walton did a stalwart job and worked most of the night on these!

HDC:ic

V+

ACRES AHG

ACRES TOR

JANUARY 21, 1981 P5700.11

P5700.07.11

Oct

Jan 21/81

ATTN: J G WARNOCK

ADJUSTING JOB 3737 - DATE 6D.

PRELIMINARY RESULTS SUGGEST PRICE ESCALATION WOULD NEED TO CONTINUE TO YEAR 2010 OR LATER, TO ACCOMMODATE BIG SERVICE CHARGE TO STATE WHICH ACCUMULATED PRIOR TO RETIREMENT OF SENIOR BONDS EARLY IN YEAR 2007.

WE ARE TESTING 10 0/0 ROLLED-IN RATE, ALSO MODEL WHICH SERVICES STATE CONTRIBUTION ON A SUBORDINATE BASIS PRIOR TO SENIOR DEBT RETIREMENT. WILL TELECOPY DATA EARLY JANUARY 22.

REGARDS

DERRICK

P.S. HAVE SOME MESSAGES IF YOU WILL BE CALLING TODAY

DALE

+

ACRES AHG

ACRES TOR

0025

TELECOPY P5700.07.11

JANUARY 16/81

J D LAWRENCE - BUFFALO 716-853-7525

C A DEBELIUS - COLUMBIA 301-992-5300

SUSITNA PROJECT
RECORD OF TELEPHONE CONVERSATION

R MOHN AND J G WARNOCK JANUARY 15TH 1981
CALLED PLACED BY J G WARNOCK TO TERRY MCGUIRE

WAS TO ASCERTAIN PLANS FOR MEETING WITH MANAGING UNDERWRITERS, TO DISCUSS POSITION OF SALAMON BROTHERS AND TO ADVISE OF CHANGE TO TITLE OF CHAPTER 17 OF PRO. T MCGUIRE WAS IN JUNEAU WITH FINANCIAL ADVISORS CONSULTING WITH THE GOVERNOR'S OFFICE ON FINANCING PLANS.

R MOHN TOOK THE CALL AND AGREED WITH CHAPTER 13 CHANGED TITLE.

HE THEN WENT ON TO SAY THAT APA WERE VERY CONCERNED OVER THE POSSIBLE TREND OF NEXT WEEKS MEETINGS PARTICULARLY IN REGARD TO SEISMIC IMPACTS ON THE COST OF WATANA AND THE VIABILITY OF THE PROJECT. MOHN INDICATED THAT IF CONCERN DID DEVELOP APA MIGHT CALL A HALT TO WORK FOR 4/5 WEEKS WHILE THE ISSUE OF DAM DESIGNS, COST, SEISMIC RESISTANCE AND VIABILITY OF A WATANA ALTERNATIVE WAS EXAMINED IN DEPTH. HE FELT THAT OTHERWISE TIME AND MONEY COULD BE WASTED IN PROTRACTED EXAMINATION OF A SITE WHICH MIGHT NOT BE BASICALLY ACCEPTABLE. I SUGGESTED THAT THE SENSITIVITY OF THE PROJECT COST VARITIONS WAS TO BE INVESTIGATED IN BROAD OVERALL TERMS WITH COST INCREMENTS WHICH MIGHT NOT BE SPECIFICALLY LINKED WITH DAM FEATURES AND THAT THIS WOULD SURELY PROVIDE AN INDICATION OF THE ROUTE TO TAKE. MOHN APPEARS TO BELIEVE THAT THE DAM ISSUE CAN BE ANALYSED MORE SPECIFICALLY. I OBSERVED THAT D H MACDONALD AND J D LAWRENCE WILL BE MEETING WITH WOODWARD CLYDE EARLY NEXT WEEK AND WOULD ARRIVE IN ANCHORAGE WITH THE LATEST VIEWPOINTS FROM THEM.

J G WARNOCK
ACRES - TORONTO

Telephone # 716 - 853 - 752.
3.5

JANUARY 16/81 P5700.~~11~~

ATTN: A KUCZYNSKI
Acres American - Buffalo

07.11 Vent

SUSITNA HYDROELECTRIC PROJECT
TASK 11 - MARKETING & FINANCE

SUBTASK 11.01 - PROJECT OVERVIEW PREPARATION AND UPDATE

WORK PROCEEDED WITHIN TASK 11 ON THE PREPARATION CHAPTERS IN THE PROJECT OVERVIEW REPORT (PRO) OF CHAPTER 12 - ANALYSIS OF ECONOMIC FEASIBILITY AND NET ECONOMIC BENEFITS, CHAPTER 13 POWER AND ENERGY MARKETING, CHAPTER 16 FINANCIAL ANALYSIS AND CHAPTER 17 SECURITY OF PROJECT CAPITAL STRUCTURE. OVERALL EDITING AND CO-ORDINATION OF THE PRO WAS CARRIED OUT BY STAFF ASSIGNED TO TASK 11.

SUBTASK 11.02 - INTERIM REPORTS

IN CO-ORDINATION WITH TASK 6 THE INPUTS REQUIRED FOR FINANCIAL ANALYSIS WERE DETERMINED AND THEN TESTED AS MODELS ON THE SELECTED FEZIBL PROGRAM. INITIAL TEST RUNS WERE FOLLOWED BY A SERIES MODEL ANALYSES COVERING VARIOUS SCHEDULES OF CAPITAL EXPENDITURES, DEBT ARRANGEMENTS AND OTHER FINANCIAL PARAMETERS. CONSULTATION TOOK PLACE WITH SPECIALIST ADVISORS ON FINANCIAL STRUCTURING AND RISK ASSESSMENT AND THEIR INPUTS WERE USED IN THE MODELLING PROCESSS. REASEARCH WAS UNDERTAKEN INTO LIKELY REGULATORY CONSTRAINTS THAT COULD APPLY TO UTILITIES PROVIDING SUSITNA OUTPUT.

SUBTASK 11.03

DURING DECEMBER SOFTWARE PROGRAMS WERE SET UP AND TESTED ON THE COMPANY'S CENTRAL FACILITIES AND WILL BE NOW AVAILABLE FOR PROCESSING THE SUSITNA PROJECT RISK ANALYSIS. INPUTS WERE PROVIDED TO CHAPTER 9 OF THE PRO.

SUBTASK 11.05

PREPARATIONS MADE TO INITIATE WORK ON THIS SUBTASK ON THE FIRST QUARTER OF 1981. RISK CONSIDERATIONS WERE DISCUSSED IN THE CONTENT OF THE FINANCIAL ANALYSIS DURING DECEMBER 1980.

SUBTASK 11.06

THIS TASK HAS NOT YET BEEN FUNDED BUT WITH THE SELECTION OF MANAGING UNDERWRITERS IN MID DECEMBER 1980. ACCESS IS NOW PROVIDED TO SPECIALIST ADVICE ON THE MATTER.

SUBTASK 11.07

IN THE COURS OF PREPARATION OF CHAPTER 17 SECURITY OF PROJECT COSTS AND REVENUES PRELIMINARY CONSIDERATION HAS BEEN GIVEN TO RISK SHARING ARRANGEMENTS FOR THE PROJECT.

SUBTASK 11.09

WITH THE APPOINTMENT BY AFA OF A MANAGING UNDERWRITERS GROUP ACTIVITY UNDER THIS TASK BEGAN THROUGH OPENING DISCUSSIONS WITH FIRST SOUTHWEST TO PLAN FOR BRIEFING MEETINGS WITH FIRST BOSTON CORPORATION AND THEIR ASSOCIATES.

J. F. Warnock
Acres Consulting

Out
Jan 15/81

T+

ACRES COLB

ACRES TOR

JANUARY 15, 1981 P5700.~~11~~ .07.11

PROJECT OVERVIEW REPORT

ATTN: C A DEBELIUS - COLUMBIA

CC: J D LAWRENCE - BUFFALO

CHAPTER 17 BEING RETITLED ''SECURITY OF PROJECTED COST AND REVENUE STRUCTURES'' AS ''PROJECT CAPITAL STRUCTURES'' HAS DEFINITE MEANING TO FINANCIAL COMMITTEE WHICH DOES NOT CONFORM TO CONTENT. HAVE ADVISED R MOHN AND HE AGREES.

G WARNOCK

ACRES

TORONTO

+

ACRES COLB

ACRES TOR

Oct
Jan 14/81

ACRES AHG

ACRES TOR

JANUARY 14/81 P5700.11

ATTN: J GILL

SUSITNA - FOR TRANSMITTAL TO APA-R MOHN/T MCGUIRE/G MANNI

CONSULTANTS

APA HAVE REQUESTED US TO PROVIDE STATEMENTS AND/OR OPINIONS FOR CONSULTANTS DR C B CHAPMAN AND PROFESSOR A J MERRETT BOTH EMPLOYED TO PROVIDE INPUT TO CHAPTER 11 OR RISK ANALYSIS/FINANCIAL ANALYSIS AND FINANCIAL PLANNING/ ANALYSIS RESPECTIVELY. BOTH CHAPMAN AND MERRETT HAVE TO DATE PARTICIPATED DIRECTLY IN OUR TASK STUDY TEAM PROVIDING CONCEPTUAL INPUT BOTH TO THE MODELLING APPROACHES AND TO ALTERNATIVE MODES OF FINANCING. UNLIKE OTHER EXTERNAL CONSULTANTS CHAPMAN AND MERRETT WILL NOT BE PROVIDING OVERVIEW OF OPINION SO MUCH AS A DIRECT CONTRIBUTION TO AND REVIEW OF OUR WORK. THESE CONTRIBUTIONS WILL MAINLY BE EMBEDDED IN THE REPORTS AND OTHER ELEMENTS OF OUR TASK 11 OUTPUT. AT AN APPROPRIATE STAGE OF THE WORK POSSIBLY AT THE CONCLUSION OF THE FIRST DRAFT POR WE COULD ARRANGE FOR EACH CONSULTANT TO PREPARE A FORMAL OVERVIEW FOR APA CONSIDERATION. THE CONSULTANTS WOULD HOWEVER BE REVIEWING WORK TO WHICH THEY HAD MADE A SUBSTANTIAL PERSONAL CONTRIBUTION. IN ADDITION TO DR CHAPMAN AND PROFESSOR MERRETT WE HAVE EMPLOYEE H DERRICK LEACH WHO IS A HIGHLY QUALIFIED FINANCIAL ANALYST TO FORMULATE AND ANALYSE THE MODELS WE HAVE ALREADY PROCESSED DEPICTING SEVERAL ALTERNATIVE FINANCING PLANS FOR SUSITNA. MR LEACH IS CO-AUTHOR WITH ME OF MUCH OF THE INPUT FOR CHAPTER 13, 16 AND 17 NOW DUE FOR TABLING ON JANUARY 20 FOR DISCUSSION WITH APA PRIOR TO ISSUE IN FINAL DRAFT FORM. DERRICK LEACH AND IF FELT DESIRABLE PROFESSOR TONY MERRETT CAN BE AVAILABLE FOR LATER DISCUSSIONS WITH APA AND FINANCIAL ADVISORS AND I WOULD RECOMMEND THAT THEIR KNOWLEDGE AND EXPERIENCE BE BROUGHT TO BEAR STRONGLY IN THIS FASHION. IN ORDER TO IDENTIFY ALL EXTERNAL INPUTS AT THIS TIME WE ADVISE THAT FEZIBL PROGRAM BEING USED AS BASIS FOR FINANCIAL

MODELS IS BEING ADAPTED, INPUTTED AND ANALYSED FOR MS MARGARET WALTON OF KEEPING AND WALTON ASSOCIATES, COMPUTER AIDED FINANCIAL ANALYSIS SPECIALISTS. SAMPLE PROGRAMS OUTPUT WILL BE TABLED ON JANUARY 20TH 1981. TRUST THAT THIS TELEX WILL FILL NEED FOR PROMPT ADVICE TO QUERIES RAISED INITIALLY FROM GLORIA MANNI'S REVIEW OF ACRES INVOICES. WILL BE PLEASED TO SUPPLY ANY FURTHER INFORMATION REQUIRED.

J G WARNOCK

ACRES CONSULTING.

TORONTO

2ND TELEX

OPERATOR -

COULD YOU PLEASE ASK MR GILL'S SECRETARY TO BOOK RESERVATIONS AT THE SHERATON ANCHORAGE HOTEL FOR MR. J G WARNOCK FOR THE NITES OF JANUARY 19, 20, AND 21.

WOULD APPRECIATE IT IF MR GILL'S SECRETARY COULD CONFIRM THIS WITH MR WARNOCK'S SECRETARY IN TORONTO - DALE NOLAN

THANKS

ACRES AHG

ACRES TOR

Date 11 60

ACRES TOR

ACRES AHG

JANUARY 13, 1981

Incoming - Jan. 14

TO: J. G. WARNOCK

AS YOU HAVE REQUESTED, I HAVE OBTAINED CONTRACTS FOR SALE OF POWER FROM MAJOR UTILITIES. THERE IS NO CONTRACT BETWEEN CHUGACH AND ANCHORAGE MUNICIPAL LIGHT & POWER. THEIR INTERTIE IS ONLY GOOD FOR ABOUT 30 KVA AND CHUGACH HAS RELAYS SET TO DISCONNECT IF A FREQUENCY DEPARTURE IS DETECTED.

NOT KNOWING MUCH ABOUT RATES & TARRIFS, I JUST WENT DOWN TO THE LOCAL PUBLIC UTILITIES COMMISSION AND GOT COPIES OF EVERYTHING THAT THEY HAD ON RAILBELT ELECTRIC UTILITY RATES. I GOT RECORDS FOR CEA, AMLEP AND GVEA.

ALL MATERIALS ARE ENROUTE AND SHOULD ARRIVE BY NEXT MONDAY. I AM SENDING THEM TO BUFFALO AND THENCE TO TORONTO VIA COURRIER.

IF MORE IS NEEDED, LET ME KNOW.

JIM LANDMAN

)))))

OFFICE MEMORANDUM

John Hayden

Date: January 8, 1981

File: P5700.07.06

...m: Phil Hoover/Mary Ann Hosko

cc: C. Debelius
J. Lawrence
~~J.~~ G. Warnock

:JECT: SUSITNA PROJECT
GENERATION PLANNING OUTPUTS

Attached are 3 page summaries of model runs on 4 plans:

A - All Thermal LG11
B - Watana/DC LG19
C - DC/Watana LG15
D - Chacachamna/DC LG17

Also attached are summary calculation sheets which include PW 1982 benefits and B/C ratios (calculated in the manner as before). Key parameters used in these runs:

1 - Wat/DC costs $5174 in 82 dollars (IDC added to this figure, $57M held out for extra capacity)
2 - Medium load forecast, Battelle 12/21/81
3 - Ebasco capital costs for thermal
4 - O&M and capital costs escalated as per Ebasco/Battelle
5 - Fuel costs as Battelle provided, coal escalated at 2.6 and 1.2% as reported by S. Diener from 1/4/82 meeting
6 - Chacachamna Case B @ $1.45 Million as per Bechtel
7 - Energies as provided 1/5/82 for Devil Canyon and 12/22/81 Watana/Devil Canyon

We are presuming these to be the base cases and will process to test sensitivity and make financial parameter run post-haste. Initial sensitivity runs will be on high and low forecasts.

The DC/Wat results are interesting. Costs are less for first 9 years, however, carrying the installed capacity burden of extra GT plants during the post-Watana period, puts Wat/DC in the more favorable light. This would indicate that Watana would need to be moved up (paying a penalty in excess unusable energy, or that some other measure would need to be taken. You have also mentioned the energy ~~description~~, at DC while Wat is filling. This has not been taken into account.

PH/kh

Phill Hoover

Attachments

0025

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG17 01/07/82 Chakachamna
****

GENERATION SYSTEM

	NUKE	COAL	NGASGT	OIL GT	DIESEL	COMCYC	TYPES	
TYPE	1	2	3	4	5	6	7-10	
OPTMZING	0	1993	1993	0	0	1993	***	
PCT TRIM	0	0	0	0	0	0		
1992 MW	0	59	452	141	67	317	155	SUM= 1190

YR	YEARLY MW ADDITIONS							TOTAL CAPAB. + TIES	
93							330*	1503	
94								1472	
95								1424	
96								1354	
97							600*	1880	
98								1825	
99								1825	
0							1*	1782	
1			1X 70					1852	
2			1X 70					1869	
3		200*						2016	
4								2016	
5			2X 70				1*	2069	
6			1X 70					2116	
7								2116	
8			1X 70					2160	
9								2159	
10		1X 200					1*	2360	
W ADD	0	400	420	0	0	0	933	SUM=	1753
RET	0	-46	-335	-141	-61	0	0	SUM=	-583
2010	0	413	536	0	6	317	1088	SUM=	2360
PCT TOT	0.	17.5	22.7	0.	0.2	13.4	46.1	SUM=100	PCT
AUTO	0	200	420	0	0	0	0	SUM=	620
PCT TOT	0.	32.3	67.7	0.	0.	0.	0.	SUM=100	PCT

* COMMITTED MW

GENERAL ELECTRIC COMPANY
OGP-3 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG17 01/07/82
****

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	H/Y	COST IN MILLION $ YEARLY COST	CUM. PW TOTAL
****	*****	*****	*****	****	******	******	*******	*******
1993	947	1503	1503	58.7	0.000	0.	166.1	120.0
1994	965	1472	1472	52.5	0.000	0.	172.2	240.8
1995	983	1424	1424	44.9	0.002	0.	179.4	363.0
1996	1003	1354	1354	35.0	0.019	0.	210.0	501.8
1997	1023	1880	1880	83.8	0.001	0.	273.9	677.6
1998	1044	1825	1825	74.8	0.009	0.	279.1	851.5
1999	1064	1825	1825	71.5	0.014	0.	284.9	1023.9
2000	1084	1782	1782	64.4	0.061	0.	293.0	1196.0
2001	1121	1852	1852	65.2	0.026	0.	306.6	1370.8
2002	1158	1869	1869	61.4	0.038	0.	319.7	1547.9
2003	1196	2016	2016	68.6	0.036	0.	362.0	1742.5
2004	1233	2016	2016	63.5	0.061	0.	374.4	1937.9
2005	1270	2069	2069	62.9	0.044	0.	384.6	2132.8
2006	1323	2116	2116	60.0	0.042	0.	405.7	2332.3
2007	1377	2116	2116	53.7	0.095	0.	425.2	2535.4
2008	1430	2160	2160	51.0	0.085	0.	449.2	2743.7
2009	1484	2159	2159	45.5	0.070	0.	461.8	2951.6
2010	1537	2360	2360	53.5	0.029	0.	479.6	3161.2

0025

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG17 01/07/82
****

YR	POOL PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY $/MWH INV.	FUEL	O+M	N.I.	TOTAL
**	******	*******	******	******	*****	*****	*****	*****	******
93	947	4736	57.09	166	14.89	16.01	4.18	0.	35.08
94	965	4829	57.13	172	14.61	16.84	4.22	0.	35.67
95	983	4922	57.16	179	14.33	17.83	4.29	0.	36.45
96	1003	5031	57.10	210	14.02	23.38	4.33	0.	41.73
97	1023	5140	57.35	274	36.29	12.61	4.39	0.	53.29
98	1044	5250	57.41	279	35.53	13.24	4.40	0.	53.16
99	1064	5360	57.51	285	34.80	13.92	4.44	0.	53.16
0	1084	5468	57.43	293	34.11	15.02	4.45	0.	53.58
1	1121	5661	57.65	307	33.55	16.06	4.54	0.	54.15
2	1158	5853	57.70	320	33.04	16.99	4.60	0.	54.63
3	1196	6044	57.69	362	40.89	14.06	4.94	0.	59.90
4	1233	6236	57.58	374	39.63	15.42	4.99	0.	60.04
5	1270	6428	57.78	385	39.60	15.26	4.98	0.	59.84
6	1323	6701	57.82	406	38.54	16.94	5.06	0.	60.54
7	1377	6973	57.81	425	37.04	18.80	5.14	0.	60.97
8	1430	7246	57.69	449	36.18	20.58	5.24	0.	62.00
9	1484	7518	57.83	462	34.87	21.33	5.22	0.	61.42
10	1537	7791	57.86	480	38.91	17.20	5.46	0.	61.56

0025.0

CF. M2

ARC Hemmer

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG11 01/07/82
****

GENERATION SYSTEM

	NUKE	COAL	NGASGT	OIL GT	DIESEL	COMCYC	TYPES	
TYPE	1	2	3	4	5	6	7-10	
OPTMZING	0	1993	1993	0	0	1993	***	
PCT TRIM	0	0	0	0	0	0		
1992 MW	0	59	452	141	67	317	155	SUM= 1190

YR	YEARLY MW ADDITIONS							TOTAL CAPAB. + TIES
93		200*						1373
94		1X 200						1542
95								1495
96		200*						1624
97			1X 70					1620
98			1X 70					1635
99								1635
0								1591
1			1X 70					1661
2								1608
3			1X 70					1625
4			1X 70					1695
5			2X 70					1747
6			1X 70					1794
7		1X 200						1994
8								1968
9			1X 70					2037
10								2037
MW ADD	0	800	630	0	0	0	0	SUM= 1430
MW RET	0	-46	-335	-141	-61	0	0	SUM= -583
2010	0	813	746	0	6	317	155	SUM= 2037
PCT TOT	0.	39.9	36.6	0.	0.3	15.6	7.6	SUM=100 PCT

GENERAL ELECTRIC COMPANY
DGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG11 01/07/82
****

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	H/Y	COST IN MILLION $ YEARLY COST	CUM. PW TOTAL
****	*****	*****	*****	****	******	******	*******	*******
1993	947	1373	1373	45.0	0.063	0.	175.7	127.0
1994	965	1542	1542	59.8	0.027	0.	199.9	267.1
1995	983	1495	1495	52.0	0.077	0.	206.6	407.8
1996	1003	1624	1624	61.9	0.059	0.	256.8	577.6
1997	1023	1620	1620	58.4	0.084	0.	266.9	748.9
1998	1044	1635	1635	56.6	0.092	0.	278.1	922.2
1999	1064	1635	1635	53.6	0.055	0.	285.0	1094.6
2000	1084	1591	1591	46.8	0.059	0.	291.8	1266.1
2001	1121	1661	1661	48.2	0.038	0.	304.3	1439.6
2002	1158	1608	1608	38.9	0.062	0.	311.4	1612.0
2003	1196	1625	1625	35.9	0.087	0.	327.4	1788.0
2004	1233	1695	1695	37.5	0.057	0.	342.9	1966.9
2005	1270	1747	1747	37.6	0.049	0.	367.0	2152.9
2006	1323	1794	1794	35.6	0.052	0.	389.9	2344.7
2007	1377	1994	1994	44.8	0.023	0.	423.8	2547.1
2008	1430	1968	1968	37.6	0.066	0.	442.0	2752.1
2009	1484	2037	2037	37.3	0.051	0.	464.7	2961.3
2010	1537	2037	2037	32.5	0.099	0.	484.3	3173.0

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT-
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG11 01/07/82
****

YR	POOL PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY $/MWH				
					INV.	FUEL	O+M	N.I.	TOTAL
**	******	*******	******	******	*****	*****	*****	*****	******
93	947	4736	57.09	176	9.31	23.36	4.44	0.	37.11
94	965	4829	57.12	200	15.31	21.39	4.68	0.	41.39
95	983	4922	57.16	207	15.02	22.22	4.72	0.	41.97
96	1003	5031	57.10	257	22.69	23.14	5.21	0.	51.05
97	1023	5141	57.37	267	22.82	23.85	5.25	0.	51.92
98	1044	5250	57.40	278	22.96	24.71	5.31	0.	52.98
99	1064	5360	57.51	285	22.48	25.37	5.32	0.	53.17
0	1084	5469	57.44	292	22.04	26.08	5.24	0.	53.36
1	1121	5661	57.65	304	21.89	26.58	5.29	0.	53.76
2	1158	5853	57.70	311	21.17	26.82	5.21	0.	53.20
3	1196	6044	57.69	327	21.09	27.82	5.26	0.	54.17
4	1233	6236	57.58	343	21.02	28.63	5.34	0.	54.98
5	1270	6428	57.78	367	21.54	30.13	5.43	0.	57.10
6	1323	6701	57.82	390	21.22	31.45	5.52	0.	58.19
7	1377	6973	57.81	424	25.93	28.97	5.88	0.	60.78
8	1430	7246	57.69	442	24.95	30.15	5.90	0.	60.99
9	1484	7518	57.83	465	24.58	31.25	5.98	0.	61.81
10	1537	7791	57.86	484	23.72	32.41	6.04	0.	62.17

****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG19 01/07/82
****

GENERATION SYSTEM

	NUKE	COAL	NGASGT	OIL GT	DIESEL	COMCYC	TYPES	
TYPE	1	2	3	4	5	6	7-10	
OPTMZING	0	1993	1993	0	0	1993	***	
PCT TRIM	0	0	0	0	0	0		
1992 MW	0	59	452	141	67	317	155	SUM= 1190

****

YR	YEARLY MW ADDITIONS							TOTAL CAPAB. + TIES
**	*******	*******	*******	*******	*******	*******	*****	****** ****
93								
94							680*	1853
95								1822
96								1774
97								1704
98								1630
99								1575
0								1575
1								1531
2								1531
3							601*	2079
4								2026
5							1*	2027
6								1939
7			1X 70				1*	1917
8			1X 70					1987
9							1*	2032
10			1X 70					2031
							1*	2102

MW ADD	0	0	210	0	0	0	1285	SUM= 1495
MW RET	0	-46	-335	-141	-61	0	0	SUM= -583
******	******	******	******	******	******	******	****	**********
2010	0	13	326	0	6	317	1440	SUM= 2102
PCT TOT	0.	0.6	15.5	0.	0.3	15.1	68.5	SUM=100 PCT
AUTO	0	0	210	0	0	0	0	SUM= 210
PCT TOT	0.	0.	100.0	0.	0.	0.	0.	SUM=100 PCT

* COMMITTED MW

C.F.M.
Watana/DC
Susitna

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG19 01/07/82
****

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	H/Y	COST IN MILLION $ YEARLY COST	CUM. PW TOTAL
****	*****	*****	*****	****	******	******	*******	*******
1993	947	1853	1853	95.7	0.000	0.	246.5	178.1
1994	965	1822	1822	88.8	0.000	0.	252.8	355.4
1995	983	1774	1774	80.5	0.000	0.	255.9	529.7
1996	1003	1704	1704	69.9	0.000	0.	268.4	707.1
1997	1023	1630	1630	59.4	0.000	0.	272.5	882.1
1998	1044	1575	1575	50.8	0.001	0.	277.9	1055.2
1999	1064	1575	1575	48.0	0.002	0.	283.7	1226.9
2000	1084	1531	1531	41.2	0.015	0.	292.6	1398.7
2001	1121	1531	1531	36.6	0.032	0.	302.2	1571.1
2002	1158	2079	2079	79.5	0.000	0.	316.9	1746.6
2003	1196	2026	2026	69.4	0.001	0.	336.1	1927.2
2004	1233	2027	2027	64.4	0.001	0.	317.6	2093.0
2005	1270	1939	1939	52.7	0.017	0.	334.6	2262.5
2006	1323	1917	1917	44.9	0.068	0.	322.7	2421.3
2007	1377	1987	1987	44.3	0.025	0.	349.0	2587.9
2008	1430	2032	2032	42.1	0.029	0.	349.3	2749.9
2009	1484	2031	2031	36.9	0.050	0.	369.8	2916.4
2010	1537	2102	2102	36.8	0.025	0.	375.9	3080.7

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG19 01/07/82
****

YR	POOL PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY $/MWH INV.	FUEL	O+M	N.I.	TOTAL
**	******	******	******	******	*****	*****	*****	*****	******
93	947	4736	57.09	247	42.05	5.29	4.71	0.	52.06
94	965	4829	57.12	253	41.24	6.37	4.74	0.	52.35
95	983	4922	57.16	256	40.46	6.77	4.75	0.	51.98
96	1003	5031	57.10	268	39.59	9.05	4.72	0.	53.36
97	1023	5141	57.37	273	38.74	9.57	4.70	0.	53.01
98	1044	5250	57.41	278	37.94	10.29	4.71	0.	52.94
99	1064	5360	57.51	284	37.16	11.02	4.75	0.	52.93
0	1084	5469	57.44	293	36.42	12.31	4.76	0.	53.49
1	1121	5661	57.65	302	35.18	13.41	4.80	0.	53.39
2	1158	6352	62.61	317	46.28	0.	3.61	0.	49.90
3	1196	6455	61.61	336	45.54	2.83	3.70	0.	52.06
4	1233	6599	60.92	318	44.55	0.	3.58	0.	48.14
5	1270	6698	60.21	335	43.89	2.49	3.58	0.	49.96
6	1323	6880	59.36	323	42.73	0.70	3.47	0.	46.90
7	1377	7079	58.69	349	42.07	3.62	3.61	0.	49.29
8	1430	7310	58.20	349	41.27	2.95	3.56	0.	47.78
9	1484	7551	58.08	370	39.96	5.39	3.63	0.	48.98
10	1537	7827	58.14	376	39.07	5.33	3.63	0.	48.02

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG15 01/07/82
****

GENERATION SYSTEM

	NUKE	COAL	NGASGT	OIL GT	DIESEL	COMCYC	TYPES	
TYPE	1	2	3	4	5	6	7-10	
OPTMZING	0	0	1993	0	0	0	***	
PCT TRIM	0	0	0	0	0	0		
1992 MW	0	59	452	141	67	317	155	SUM= 1190

YR	YEARLY MW ADDITIONS							TOTAL CAPAB. + TIES
**	*******	*******	*******	*******	*******	*******	*****	******
93								
94							600*	1773
95								1742
96			1X 70					1694
97			1X 70					1694
98			1X 70					1690
99							1*	1706
0			1X 70					1706
1			1X 70					1732
2								1802
3							680*	2429
4								2376
5							1*	2377
6								2289
7							1*	2267
8								2267
9							1*	2242
10								2241
							1*	2242
MW ADD	0	0	350	0	0	0	1285	SUM= 1635
MW RET	0	-46	-335	-141	-61	0	0	SUM= -583
******	******	******	******	******	******	******	****	**********
2010	0	13	466	0	6	317	1440	SUM= 2242
PCT TOT	0.	0.6	20.8	0.	0.2	14.1	64.2	SUM=100 PCT
AUTO	0	0	350	0	0	0	0	SUM= 350
PCT TOT	0.	0.	100.0	0.	0.	0.	0.	SUM=100 PCT

* COMMITTED MW

0025

DC/WATHEN

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG15 01/07/82
****

YEAR	LOAD	TOTAL CAPABILITY (INCLUDING TIES) YEAR END	TOTAL CAPABILITY (INCLUDING TIES) TIME OF PEAK	PCT. RES.	LOSS OF LOAD PROBABILITY D/Y	LOSS OF LOAD PROBABILITY H/Y	COST IN MILLION $ YEARLY COST	COST IN MILLION $ CUM. PW TOTAL
****	*****	*****	*****	****	******	******	*******	*******
1993	947	1773	1773	87.2	0.001	0.	199.4	144.0
1994	965	1742	1742	80.5	0.004	0.	204.6	287.6
1995	983	1694	1694	72.4	0.019	0.	211.0	431.3
1996	1003	1694	1694	68.9	0.029	0.	241.5	591.0
1997	1023	1690	1690	65.2	0.048	0.	252.8	753.2
1998	1044	1706	1706	63.4	0.062	0.	262.9	917.1
1999	1064	1706	1706	60.3	0.090	0.	271.0	1081.0
2000	1084	1732	1732	59.8	0.078	0.	290.4	1251.6
2001	1121	1802	1802	60.7	0.039	0.	304.8	1425.5
2002	1158	2429	2429	109.8	0.000	0.	354.4	1621.7
2003	1196	2376	2376	98.7	0.000	0.	373.8	1822.6
2004	1233	2377	2377	92.8	0.000	0.	355.2	2007.9
2005	1270	2289	2289	80.3	0.000	0.	371.9	2196.4
2006	1323	2267	2267	71.4	0.000	0.	360.3	2373.6
2007	1377	2267	2267	64.6	0.000	0.	382.4	2556.3
2008	1430	2242	2242	56.8	0.000	0.	380.9	2732.9
2009	1484	2241	2241	51.0	0.000	0.	403.7	2914.6
2010	1537	2242	2242	45.9	0.001	0.	403.6	3091.0

GENERAL ELECTRIC COMPANY
OGP-5 GENERATION PLANNING PROGRAM-SUMMARY OUTPUT
****

ALASKA RAILBELT
ZERO% - 3%
JOB NUMBER 2MLG15 01/07/82
****

YR	POOL PEAK (MW)	TOTAL ENERGY (GWH)	LOAD FACTOR	TOTAL COSTS (MIL.$)	YEARLY $/MWH				
					INV.	FUEL	O+M	N.I.	TOTAL
93	947	4736	57.09	199	22.62	14.16	5.32	0.	42.10
94	965	4829	57.12	205	22.19	14.83	5.36	0.	42.38
95	983	4922	57.16	211	21.77	15.69	5.42	0.	42.88
96	1003	5031	57.10	242	21.91	20.61	5.50	0.	48.01
97	1023	5141	57.37	253	22.05	21.53	5.59	0.	49.17
98	1044	5250	57.41	263	22.20	22.21	5.67	0.	50.08
99	1064	5360	57.51	271	21.75	23.06	5.75	0.	50.56
0	1084	5469	57.43	290	21.93	25.26	5.93	0.	53.11
1	1121	5661	57.65	305	21.78	26.03	6.02	0.	53.84
2	1158	6351	62.60	354	51.97	0.	3.83	0.	55.81
3	1196	6454	61.60	374	51.14	2.85	3.92	0.	57.91
4	1233	6598	60.91	355	50.03	0.	3.80	0.	53.83
5	1270	6697	60.20	372	49.28	2.45	3.80	0.	55.53
6	1323	6879	59.35	360	47.98	0.70	3.69	0.	52.37
7	1377	7079	58.69	382	46.62	3.62	3.78	0.	54.02
8	1430	7310	58.20	381	45.15	3.25	3.70	0.	52.11
9	1484	7551	58.08	404	43.71	5.96	3.78	0.	53.46
10	1537	7827	58.13	404	42.17	5.67	3.73	0.	51.56

Calculations

SUBJECT: Economic Analysis
SUSITNA PROJECT

JOB NUMBER P5700.06
FILE NUMBER
SHEET 1 OF
BY pmt DATE
APP DATE

$ x 10^6

PLAN	ID	1993 2010	1982 Present Worth 2010	2010-2051	1993-2151	1982 NET BENEFIT	1982 PROJECT PW	B/C
1. Thermal	LG11	3173.0	484.3	4756.3	8129.	—		1.0
Watana/Devil Can	LG19	3080.7	375.9	3847.0	6928	1201	5319	1.23
Watana	LG15	3091.0	403.6	4130	7221	908	5207	1.17
Watana/DC	LG17	3161.0	479.6	4908.2	8069	60	NOT CALC.	1.05 est

$\frac{4756.3}{3847.0} + \frac{1193}{3847} = 1.28$ (remainder illegible)

FORM NO. 1-

Calculations

SUBJECT:

JOB NUMBER _____
FILE NUMBER _____
SHEET _____ OF _____
BY _____ DATE _____
APP _____ DATE _____

PW of Wat/DC

			$ x10^6
1993	Water	$4,991 \times 10^6 \times .7224$ =	3605
2002	DC	$2,376 \times .5537$ =	1,316
1993-2001	O&M	$= 10M \times 6.60^{D}$ =	66
2002-2010	O&M	$= 22.9LM \times .7.51 \times .5537$ =	64
2011-2051		$= 27.38 \times 23.119 \times .4243$ =	268
			$ 5319

PW of DC/WAT

1993	DC	$2,685 \times .7224$	1939
2002	WAT	$5,182 \times .5537$	2869
1993-2001			66
2002-			64
			268
			5207

PW of CHAC/DC

1993	Other	$1767 \times .7224$	
1997	DC		NOT CALC.
O&M	1993-2001		
	2002-2010		
	2011-2051		

1767
1452
3219

$4991 \quad 2685$
$2376 \quad 5182$
$7367 \quad 7867$

+ 500 [illegible]

$\frac{1+r}{1+i} = .9702913$ $\left| \frac{1}{1.03}\left[\frac{1-x^n}{1-x}\right] \cdot 6.60 \right.$ at $n=7$
$= 61.397$ at $n=50$

FORM NO. 1L - EV. 1

Please Xerox for GRT
V5700 Task 11

T+

ACRES COLP

ACRES TOR

JANUARY 7, 1981 P5700.11

Out
Jan 7/81

ATTN: P H TUCKER

RE: SUSITNA RAILBELT

RE YOUR LETTER 17TH DECEMBER TO COMMONWEALTH OUR SUMMARY OF RAILBELT UTILITY EXISTING CAPACITY FOR TASK II WAS TAKEN FROM 1980-81 EDITION ELECTRICAL WORLD AND TOTALS 942.2 MW WHICH VERY CLOSE YOUR 943.6 MW TOTAL. SIGNIFICANT VARIATIONS ARE APLD 195.9 MW AND CVLA 17.6 MW MINOR VARIATIONS CVLA 211.2 MW MEA 1.1 MW. THERE POSSIBLY IS SOME VARIATION IN OPTION NAMEPLATE VERSUS ACTUAL OUTPUT. HOPE THAT THIS MAY BE HELPFUL IN REACHING A CONSENSUS ON A MOVING TARGET.

J G WARNOCK

ACRES CONSULTING

TORONTO

+

ACRES COLP

ACRES TOR

ACRES

OFFICE MEMORANDUM

TO: Krish Krishan

Date: January 6, 1981

File: P5700.~~09~~ 07.11

FROM: Chris Chapman

cc:

SUBJECT: SUSITNA HYDROELECTRIC DEVELOPMENT

Gavin has reviewed and amended the enclosed draft as an outline of the section 9.29 and 9.3.5 requested. Please feel free to further command them as you see fit, just let me know if any substantial departures in philosphy are involved.

The chapter sections should be reviewed by John Hayden and John Lawrence to ensure that they fit the overall pattern of the technical portions of the Project Overview Report.

for CBC

CC:dn
Attachment

Subtask 11.01	Project Overview
9	Susitna Hydroelectric Development
9.2	The Selected Development
9.2.9	Analysis of Risks and Assesment of Project Contingencies

---

Utility risk analysis must demonstrate that the selected approach to Susitna Hydroelectric Development can be implemented without excessive risk exposure for any of the parties involved. If any party is excessively exposed to risk, the project is unlikely to proceed. However, the present risk analysis effort in the context of this chapter is only indirectly concerned with this issue. It is primarily concenred with assisting the development of a selected approach.

Assisting with the development of a selected approach involves ensuring that all potential sources of significant risk have been identified, and associated with viable responses, a contingency or preventative nature. If viable responses cannot be identified, the approach must be modified or replaced.

Risks of a technical nature have been identified. For example, the selected design for the Devil Canyon dam may not stand up to further tests of adequacy in relation to seismic effect. Realization of this risk would require a change in design, implying new cost and schedule estimates. Current recognition of this risk requires cost estimate contingency provisions. Other risks of this kind include unforeseen foundation problems (unstable bedrock, permafrost, etc.) discovered prior to construction or during the initial construction phases, unexpected flooding conditions,

unusually inclement weather, unexpected rivers icing conditions, and so on. All such sources of risk will involve technical responses if they are realized, and current recognition of such risks requires cost estimate contingency provisions. Some of these contingency provisions must be included in the expected expenditures. The residual involves potential variations about the expected level, which must be anticipated even if they are not expected.

As the study proceeds, and selected approach details become available, these sources of risk, associated technical responses, and associated contingency cost provisions, will all be defined in greater detail. To facilitate this ongoing process, procedures developed by Acres will be used to build up structural documentation, as outlined in the POS (February 1980) task 11.04, revised to 11.03, Base Plan Risk Analysis. This documentation will form the basis of the ultimate demonstration of project robustness. To date the emphasis has been signalling, as necessary, the need to consider revisions in the selected approach. No major sources of serious technical risk have been detected, but in the absence of detailed analysis, substantial contingency cost provisions will have been made.

Not all risks relevant to the selected approach are technical. For example, the risk of providing capacity before it is needed is an economic consideration, but it has technical implications. We have recognized that responding to this risk may necessitate an approach which will prove inefficient in a technical sense if this risk is not realized, because it is efficient in an overall sense at the time the decision must be made.

Developing Devils Canyon prior to the Watana site may be attractive provided both sites are needed by 2005, but Watana on its own may prove preferrable if the second phase is delayed significantly. The need to mitigate the effects of a low load growth profile may make a Watana first approach preferrable even if it is not the most efficient approach given the expected load growth profile. Responding in this way to financial or regulatory risks is also a possibility. At this stage we are endeavouring to avoid such pressures as far as possible. Risk analysis is economic and financial contexts (see Chapters 12, 13, 15, 16, 17) is primarily concerned with responses which minimize the impact on the project's efficiency in a technical sense. However, we are sensitive to the need to relate such considerations to the development of a selected hydroelectric project development.

9.3 Review of Transmission Development Plan

9.3.5 Analysis of Risk and Assessment of Project Contingencies

The approach to and considerations of risk analysis for transmission development planning are similar to those discussed in section 9.2.9. However, at present the transmission facilities have received limited attention, in line with their relative significance to other Susitna Hydroelectric Development considerations.

FROM: M.A. Hosko

D5700.11

for G. Warnock

1993 Production Cost Summaries

SUSITNA

L8J9

TYPE	RATING MW	ENERGY OUTPUT MWH	CAPACITY FACTOR,	FUEL COST THOUSAND $	O + M THOUSAND $	THERMAL $/MWH
1 NUKE	0.	0.	0.	0.	0.	0.
2 COAL	45.	295786.	0.7503	6842.	1138.	26.98
3 NGASGT	434.	990835.	0.2607	51721.	1382.	53.59
4 OIL GT	133.	66298.	0.0569	7748.	347.	122.11
5 DIESEL	58.	23071.	0.0457	2600.	144.	114.81
6 COMCYC	201.	1015339.	0.5769	30307.	857.	30.69
TIENG		1.		0.		10.00
EXCESS/SALE		[redacted]				
TOTAL	870.	2391330.		99119.	3868.	43.07
HYDRO	544	2418				
	1412	4730000.				

THERMAL

LME1

TYPE	RATING MW	ENERGY OUTPUT MWH	CAPACITY FACTOR,	FUEL COST THOUSAND $	O + M THOUSAND $	THERMAL $/MWH
1 NUKE	0.	0.	0.	0.	0.	0.
2 COAL	145.	1007158.	0.7929	19178.	2605.	21.72
3 NGASGT	434.	1478736.	0.3891	77964.	1528.	53.76
4 OIL GT	133.	106514.	0.0906	12248.	369.	119.68
5 DIESEL	58.	33811.	0.0664	3545.	196.	111.64
6 COMCYC	201.	1458132.	0.8285	41080.	940.	29.85
TIENG		0.		0.		10.00
[redacted]		[redacted]				
TOTAL	970.	4083050.		154035. June 81	6749.	39.14
PURCHASES		2000				
HYDRO	144	645300.				
	1112	4730000		511000 Dec 81		

		Costs	Output	Av.
78/9 case 1 (0% Infl.) (No interconnection)	Anchorage-Cook I.	34.1	2376	14
	Fairbanks-Tanana	34.3	778	44
				21.7
78/9 Case 2 (0% Infl.) (Interconnected)	Anchorage-Cook I	34.1	2376	14
	Fairbanks-Tanana	34.3	778	44
				21.7
78/9 Case 3 (0% Infl.) (Existing)	Anchorage-Cook I	34.1	2376	14
	Fairbanks-Tanana	34.3	778	44
				21.7

KS
CC AJT
Relm JGW

ACRES

Calculations

SUBJECT: SHORTLIST PLANS

JOB NUMBER P5100.06
FILE NUMBER
SHEET 2 OF
BY JPGM DATE 1/7/81
APP DATE

PLAN	STAGE	DAM	MAX. HEL FT.	INST. CAP MW	OPER. MODE	CAPITAL COST* $ x10^6	CONST. PERIOD YEARS**	EARLIEST ONLINE DATE***
2A	1	WATANA	2000	400	BASE	1570	7½	START 1993
	2	RAISE DAM	+200	-	BASE	360	3	-
	3	ADD CAPACITY	-	+400	PEAKING	130	3	-
		NOTE: STAGE 3 IS OPTIONAL, ONLY APPROPRIATE IF ADDED CAPACITY IS REQUIRED AS ENERGY INCREASE OVER STAGE 2 MINIMAL. SHOULD ALS INCORPORATE D/S REREG. DAM COST ± $100 x 10^6						
	4	DEVILCAN.	1450	400	BASE	900	6½	-
		NOTE: WATANA COULD OPERATE IN PEAKING MODE						
TOTAL CAPACITY:				200-1200 MW				
3A	1	WATANA	2200	400	BASE	1740	9	START 1994
	2	ADD CAPACITY	-	+400	PEAKING	150	3	-
		NOTE: AS FOR STAGE 3 NOTE IN SCHEME 2A ABOVE						
	3	DEVILCAN.	1450	400	BASE	900	6½	± MID 1997
		NOTE: WATANA COULD OPERATE IN PEAKING MODE						
TOTAL CAPACITY:				800-1200 MW				
6A	1	HDCAN.	1755	400	BASE	1390	7½	MID 1993
	2	ADD CAP.	-	+400	PEAKING	140	5	
		& OLSON		150	BASE	± 650		
		NOTE: STAGE 2 IS OPTIONAL; ONLY APPROPRIATE IF ADDED CAPACITY ~~IS REQUIRED~~ AND SMALL AMOUNT OF ADDITIONAL ENERGY IS REQUIRED. OLSON ACTS AS REREG. DAM. INCREASE IN ENERGY AT HDCAN IS MINIMAL.						
	3	VEE	2350	400	PEAKING	1060	7	
		NOTE: IF APPROPRIATE STAGE 2 COULD FOLLOW STAGE 3						
TOTAL CAPACITY:				800-1350 MW				

NOTES: * INCLUDING ENGINEERING AND ADMINISTRATION BUT EXCLUDING IDC
** FOR CALCULATION OF IDC
*** FIRST UNIT ONLINE; OTHER UNITS FOLLOW; SEE SHEET 4

FORM NO. 152 REV. 1

Calculations

ACRES

SUBJECT: ENERGY SUMMARY

JOB NUMBER _____
FILE NUMBER _____
SHEET 3 OF _____
BY _____ DATE _____
APP _____ DATE _____

PLAN	STAGE	DAM (WSL)	CAP MW	ANNUAL ENERGY-GWH FIRM*	ANNUAL ENERGY-GWH AVERAGE	ANNUAL PLANT FACTOR %	MONTHLY DETAILS ON SHEET:
2A	(1)	WATANA (2000)	400	1708	2109	60.2	5
	(2)	RAISE DAM (+200)	-	961	881		-
	SUBTOTALS		(400)	(2669)	(2990)	85.3	6 R**
	(3) OPT.	ADD CAP (-)	+400	0	- 262		-
	SUBT.		(800)	(2669)	(3252)	46.4	7 R**
	(4)	DEVIL CAN. (1450)	400	2514	3030		
	TOTALS		1200	(5309)	6227	59.2	8
	(4A)	EXCLUDING STAGE 3					
	TOTALS		800				9
3A	(1)	WATANA (2200)	400	2669	3990	35.3	6 R
	(2) OPT.	ADD CAP (-)	+400	0	262		-
	SUBT.		(800)	(2669)	(3252)	46.4	7 R
	(3)	DEVIL CAN. (1450)	400	2514	3030		
	TOTALS		1200	5309	6227	59.2	8
6A	(1)	HDCAN. (1755)	400	2657	3072	87.7	10
	(2) OPT.	ADD CAP.***	+400				
		OLSON ( )	150				
	SUBT.		(950)	( )	( )		11
	(3)	VEE (2350)	400	1011?	1470?		
	TOTALS		1350				12
	(3A)	EXCLUDING STAGE 2					
	TOTALS		800				13

* APPROX 95% SECURE

** REPEAT OF DATA PRESENTED

*** 400 MW ADDED TO HDCAN ADDS 0 GWH TO FIRM AND 210 GWH TO ANNUAL ENERGY.

FORM NO. 152 REV. 1

OFFICE MEMORANDUM

To: Memo to File

Date: January 5, 1981

File: ~~P6700.11~~ 5700.07.11

FROM: J G Warnock

cc:

SUBJECT: SUSITNA HYDROELECTRIC PROJECT

This memo records the thoughts emerging after discussions with APA November/December 1980 and introduces these to a possible concept for financial analysis.

Concerning options for financing:-

1) State funds might well provide equity (and possibly some debt) financing from the general obligation funds. (It is noted that, at present, the permanent fund cannot invest in such project activity and is limited to investment in commercial paper where it earns about 11 1/2%).

2) State could undertake to finance the construction of the major dam (Watana) at a cost of say $16M and provide the dam to APA under a first mortgage arrangement whereby.

   -repayment schedule would be linked to differential in cost between the cost of service from the remaining portions of the power development and some proportion of the next lowest cost of power supply (e.g. coal fired generation).

   -APA might finance the "capacity" and State the "energy". Energy might then escalate in cost in linkage (or near so) with other energy forms with capacity staying firm. In this way the State - not APA - would shoulder responsibility for escalation in cost.

-capacity installed could possibly be trimmed back to be closer to market needs yet - without the cost burden of the dam - be economic and financially feasible.

-lead into a convenient split tariff funding and form of power contract with utilities.

3) Possibility exists where debt service costs could be capitalised during early years of operation on some mortgage arrangement under which the asset value of the State owned dam could be enhanced for a few years before repayment commences. (i.e. deferred interest rolled-in to capital cost of project).

4) State recognition that, for the initial years debt service will be held back in return for an increased return in later years and possibly some balloon payment at time oil revenues diminish.

5) Provides better opportunity for some variable interest rate approach with linkage to some appropriate index.

Note

Certain of these options are now being examined in early runs of the financial analysis study. In particular variation 2 is being considered on the basis of:-

1) Sequenc- Watana 800 MW 1997
Devil Canyon 600 MW 2005

2) State creates Susitna Basin Authority (SBA) as adjunct to APA.

3) SBA creates Susitna Basin Fund $500M set aside in 1981 and supplemented during construction period.

4) SBA takes responsibility for funding construction of Watana Dam only.

5) APA takes responsibility for all other installations and for establishing "cost of power" less "cost of dam".

6) SBA receives from APA a royality in perpetuity for the provision of the head waters and water rights at a rate of starting in 1977 at -

Alternative I

a) Cost of power from next lowest alternative x 90% minus b) Cost of power for other power facilities (less dam)

and then continuing to escalate at general inflation rate.

Alternative II

Royalty starting at 1/2% of revenues and gradually increasing to maximum of 8% of revenues and then continuing at a steady rate of 8% of revenues "in perpetuity".

7) Susitna outputs marketed at a level of 6(a)

8) In selected year, say 2007, Susitna energy costs frozen and then (i) continue at that level or option (ii) escalate at a rate less than the general inflation level.

9) Possibly remaining open for APA to acquire water rights from State on terms judged for best State and electricity consumers in say 3045 when original 1981 investment has adequately proved its worth by transferring beneficial investment in the "oil plenty" years to a period when oil revenues may be depleted.

Notes

1) $900M selected as a notional cost of Watana Dam.

2) Schedule of expenditures on construction site as attachment 1.

Memo to File-4

January 5, 1981
P5700.11

3) Cost of power on system at time that Susitna delivery begins determined by escalating a 1980 base energy cost of 45 mills/Kwhr at a rate of 7%(gen ESC) + 3% (fuel cost increment).

4) Funding from Susitna Basin Fund can be employed to general optimisation of overall project through application to early construction costs of non dam facilities with later recovery from senior debt financing and application to later stages of dam construction.

5) Susitna Basin Fund investment treated as subordinate debt (equivalent in seniority to equity).

6) Use of Susitna Basin Fund and bank financing used to delay need for senior debt draw downs and to shorten significantly the term of 1st mortgage bond issue.

7) In order to identify Watana as a viable investment on its own under these conditions analysis to consider it separately from Devil Canyon where financing might benefit from Watana cash flow.

JGW:dn

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

SUMMARY

ANALYSIS OF FINANCING SCHEMES

Financing Scheme	Amount	Equity Source	Consideration	Equity Requirements	Lenders Requirements (Third Party) Compl. Req.	Guar. Avail.	Supp. Req.	Cont. Avail.	Cover Req.	Cover Avail.	Viability Limits Interest	Cap. Cost	Demand	Overall Assessment
1.State provides 5% Debt 10% Third Party Debt	None	-	-	-	Yes	No	Yes	?	1.25	?	10% in money terms	10%		

General Comment - Financial viability is marginal to increase in interest rates, capital cost or demand shortfalls. Viability would also require a completion guarantee

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2.State funds Watana +10% Third Party Debt	None	-	-	-	Yes	No	Yes	?	1.25	?				

General Comment - Financial viability still marginal to interest rates, capital cost, etc. Completion Guarantees less in scale but still necessary

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

SUMMARY - (cont'd)

ANALYSIS OF FINANCING SCHEMES

Financing Schemes	Amount	Equity Source	Consideration	Equity Requirements	Lenders Requirements (Third Party) Compl. Req.	Guar. Avail.	Supp. Req.	Cont. Avail.	Cover Req.	Cover Avail.	Viability Limits Interest Cost	Cap. Demand Assessment	Overall
3.Royalty Residual Financing (State Supplies Cost Debt, Equity & Guarantees)	Cost Debt	State	*Cummulative Residual Royalty giving a Risk Rate of Return	Assurances on upper limit to costs in real terms	Yes	Yes	Yes	?	1.25	Yes	% in real terms		

General Comment - The cummulative residual royalty would be first charge on profits after interest + debt repayment A problem would be to agree the Risk Rate of Return.

4.Residual Renewal Financing (State Supplies Cost Debt, Equity & Guarantees)	Cost Debt	State	Corresponding % of Residuals	Assurances on upper limit to costs in real terms	Yes	Yes	Yes	?	1.25	Yes	- % in real terms		

General Comment - Financial viability is ensured as long as project is economically viable. Higher interest rates or capital cost resulting from inflation should long terms be more than self compensating in their effect on economic viability. By conferring a corresponding proportion of the long term value of the project we would establish a trade off between State provision of finance and residual rights in the project.

State of Alaska would, however, need to be assured that i : was assuming a determinate risk in real terms (real increases in costs would not necessarily be self compensating) by having well attested assurances as to project's range of real capital cost.

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

Notes

*Cummulative Residual Royalty would be paying off all State contribution by a royalty calculated on expected sales to recover the contribution with the risk rate of return (18-20%) with carried forward shortfall at this risk rate of return.

The risk rate of return could be escalated at the margin depending on degree by which the real cost exceeds the forecast level, e.g. the basic return on forecast real cost might be 16% but with 20% on any real overrun on grounds that the overrun is a higher risk.

AGNES

OFFICE MEMORANDUM

To: Memo to File

Date: December 31, 1980

File:

FROM: J G Warnock

cc: D Leach
S Diener
C A Debelius

SUBJECT: SUSITNA

Extract from Alaska Power Administration evaluation of Susitna made in 1978 provides following data:

-Based on Watana		$1.43 bn capital cost
Devil Canyon		$0.67 bn capital cost
Transmission		$0.34 bn capital cost
Total investment including I.D.C. (incl. transmission)		$3.33 bn
-7 1/2% interest rate		7 1/2%
-Mill rates (based on 5% escalation 1978 to project commissioning date)	1978	4.7 c/Kwhr
	1985	6.2
	1990	8.2
	1994	9.7 - Project commissioned (possibly allowing only for modest increase in operating cost during first 6 years of operation)
	2000	9.8

The relevant report is being returned from Buffalo to S Diener together. (Now available in Toronto)

JGW:dn

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ACRES AHG

ACRES TOR

DECEMBER 31, 1980 P5700.11

ATTN: J LANDMAN

Outgoing
Dec. 31/80

RE: SUSITNA TASK II

WE REQUIRE ANY AVAILABLE INFORMATION ON POWER CONTRACTS UNDER WHICH ELECTRICITY SUPPLY IS PROVIDED BY ALASKA POWER ADMINISTRATION FROM EKLUTNA TO AML + P AND OTHERS OR FROM SNETTISHAM OPERATED BY USAC TO CONSUMING UTILITIES IN S.E. ALSO INTERESTED IN POWER CONTRACT ARRANGEMENTS WHICH MAY EXIST BETWEEN CHUGACM AND ANCHORAGE MUNICIPALITY OR COVERING ANY SIGNIFICANT OTHER SUPPLY/PURCHASE ARRANGEMENTS. SUGGEST YOU CHECK AVAILABILITY OF INFORMATION FROM PUBLIC UTILITIES COMMISSION AND/OR ALASKA POWER AUTHORITY AND ADMINISTRATION. WOULD APPRECIATE HIGHLIGHTS BY TELEX FOLLOWED BY COPIES OF FULL TEXT ALLOCATING 16 HOURS FROM P5700.11 FOR THIS EFFORT. HAPPY NEW YEAR TO ALL ALASKA BASED STAFF.

G WARNOCK

TORONTO

+

ACRES AHG

ACRES TOR

ACRES TOR

O

Incoming
Dec. 30/80

ACRES BUF

12/30/80

ACRES TORONTO

ATTENTION: G. WARNOCK/S. DIENER

SUBJECT: SUSITNA HEP/SCHEDULES AND COSTS

BT

DATA FOR PRELIMINARY ESTIMATE OF SUSITNA SCHEME SCHEDULE.

SCHEME:

WATANA AT EL. 2200, 800 MW ONLINE 1997 (12 YRS. CONST.)
DEVIL CANYON AT EL. 1450, 600 MW ONLINE 2005 (8 YRS. CONST.)

(ALSO BEING CONSIDERED: POSSIBILITY OF ONLY INSTALLING 400 MW AT WATANA TO OPERATE AT HIGHER ~~POINT~~ PLANT FACTOR AND/OR BUILDING DEVIL CANYON 250 MW FIRST FOR ONLINE 1994.)

COST:

LATEST CAPITAL COSTS (1980 D)

LATEST CAPITAL COSTS (1980 □)

WATANA □1.9 BILLION (800 MW)

DEVIL CANYON □1.0 BILLION (600 MW)

COSTS INCLUDE 20 PERCENT FOR CONTINGENCIES AND 12 PERCENT FOR ENGINEERING, ADMIN. AND OWNERS COSTS.

CASH FLOW, GIVEN BELOW, ASSUMES A SYMMETRICAL S-SHAPED CASH FLOW DISTRIBUTION WITH A THREE YEAR LEVEL PAYOUT PERIOD PRIOR TO MAIN PROJECT CONSTRUCTION FOR ACCESS ROADS AND OTHER PRELIMINARY WORK. (IN PREVIOUS MEMORANDA ACCESS ROADS COSTS WERE NOT SEPERATED FROM TOTAL COSTS. ACCESS ROADS COSTS HAVE BEEN ESTIMATED AT □96 MILLION AND □46 MILLION FOR WATANA AND DEVIL CANYON, RESPECTIVELY).

CASH FLOW □ MILLIONS

YEAR	WATANA	DEVIL CANYON	TOTAL
1985	0	0	0
1986	32.00	0	32.00
1987	52.15	0	52.15
1988	107.17	0	107.17
1989	150.32	0	150.32
1990	225.50	0	225.50
1991	280.53	0	280.53
1992	300.67	0	300.67
1993	280.53	0	280.53
1994	225.50	0	225.50
1995	150.32	0	150.32
1996	75.17	0	75.17
1997	20.14	0	20.14
1998	0	15.33	15.33
1999	0	50.26	50.26
2000	0	134.58	134.58
2001	0	203.57	203.57
2002	0	238.51	238.51
2003	0	203.57	203.57
2004	0	119.25	119.25
2005	0	34.93	34.93
2006	0	0	0
TOTALS	1,900	1,000	2,900

ENERGY:

ESTIMATES OF MONTHLY ENERGIES.

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WATANA

MONTH	WATANA 800 MW AVERAGE	WATANA 800 MW PRIMARY	WATANA & DEVIL CANYON 1400 MW AVERAGE	WATANA & DEVIL CANYON 1400 MW PRIMARY
JAN	264	263	523	519
FEB	250	249	496	494
MAR	224	224	443	442
APR	201	201	381	392
MAY	186	186	406	392
JUN	187	183	424	371
JUL	285	183	474	361
AUG	499	190	738	381
SEP	370	204	671	407
OCT	233	233	472	462
NOV	266	266	526	522
DEC	287	287	571	566
ANNUAL	3,252	2,669	6,125	5,309

NOTES:

1. ELECTRICAL SYSTEM PRODUCTION COST MODELING (OGPV) RESULTS WILL BE FORWARDED AS SOON AS AVAILABLE FROM COLUMBIA.

2. ABOVE COST FIGURES ARE ALL PRELIMINARY AND WILL BE REFINED ONCE CONSTRUCTION SEQUENCES AND ONLINE DATES HAVE BEEN FIRMED UP BY GENERATION PLANNING WORK.

3. PLEASE ADVISE IF ANY ADDITIONAL DATA IS REQUIRED.

REGARDS,

REGARDS,

I. HUTCHISON

ACRES BUFFALO

91-6423

CORRECTIONS:

1. UNDER SCHEME: 2ND PARAGRAPH 2 LINE SHOULD READ MMM....
   HIGHER PLANT FACTOR ....
2. IN THE FIRST TABLE, TOTAL FOR WATANA SHOULD BE 1,900
3. UNDER THE TABLE ENERGY: MONTH OF JANUARY
   WATANA SHOULD READ 263 NOT 293

ACRES TOR

0025

OFFICE MEMORANDUM

P5700.11

To: Those Listed

Date: December 30, 1980

File:

FROM: J G Warnock

cc: S Diener
D Leach
M Walton
C B Chapman
J D Lawrence
C A Debelius

SUBJECT: RECORD OF TELEPHONE CALL WITH A SYKES, CONSULTANT DECEMBER 30, 1980 SUSITNA

Telephone call related to discussions which A Sykes has had over the past few days with Dr C B Chapman and Professor A J Merrett concerning approaches to financing analysis of Susitna Hydroelectric Project.

Concerning the paper produced after Sykes/Chapman disucssions now in mail Allen re-iterated the points at issue:

"The regulatory process which will apply will designate a capital cost base to which an acceptable annual charge will apply being the required rate of return plus a provision for a sinking fund. It is of vital interest to the project study team to know what APA rate of return on capital is desired and allowable under State of Alaska (and Federal) regulations.

It is likely that for Susitna the initial annual charges to cover all costs will be high and rise gently, only to cover increases in operating and maintenance cost. Furthermore there is the "danger" that Susitna may yet present a higher present worth value than other equivalent energy producing facilities burning fuels. Obviously Susitna will be required to meet the test of a competitive present value.

We are advised to determine what rules apply at present through the State PUC jurisdiction and whether APA would be allowed to depart from usual practice and allow revenues from hydroelectric power generation to increase through the project life albeit at a modest rate.

It is further desirable to consult either APA auditors or others familiar with utility audit practice to see whether payment of interests (and dividends) would be allowed while the project operated, during the early years, in a deficit position pending later recovery".

Specific questions are posed by Tony Merrett.

1) What is the "gap" between income to match market prices and outlay to support Susitna costs? How long does the gap exist?

2) If initial capital cost is at index 100 to what level does it rise as maximum and how long does it take for the capital cost to reach a level where the deficit ceases? What is the relative level at that time?

3) What is the "profile" of the tariff which would be allowed for a typical coal fired generating supply?

Noted - that we need to apply proper and firmly agreed discount rate. If Susitna is best in long run there must be mechanics in which will cause this choice to be made and yet accommodate the desired financial parameters. The decision may yet turn on the issue of whether the State will allow APA not to cover costs for a period of as much as 15 years provided project is still economic with all costs rolled in.

A statement prepared by A Sykes will be in our hands early in week of 5th January 1981.

JGW:dn

Alaska Power Authority
Susitna Hydroelectric Project
Task 11 Marketing and Financing
P5700.11

Memo from: A. Sykes/C. B. Chapman

Conclusions on Relevant Financing and Economic Tests for Long-Lived Projects

1. Introduction

Long-lived projects such as hydro electric projects tend to have higher capital costs and lower operating costs than the main competitive projects. The traditional economic calculations such as those done by the Army Corps. of Engineers tend to be of the type which produce an annual costs or a unit cost which is the same for every year of the project's life or every unit of product produced. Thus for say the 40 year project the capital element of this charge would comprise the required rate of return plus the sinking fund depreciation. (There are variants on this method which allow for regular or temporary inflation, but these do not alter the fundamental principles at work which have the main effect on the resulting calculations.) In the case of Susitna the application of this approach will result in a tariff which is initially 60% higher than the best coal alternative. The cost of coal to a coal-fired power station, however, can be reasonably expected to rise year by year in step with inflation perhaps assisted by the current strong upward trend in all energy prices. Thus the cost of electricity from a coal-fired station will rise to the point where it overtakes that of Susitna and continues well beyond it. The questions which must be considered are whether these conventional calculations give an acceptable and realistic picture; and whether there is the freedom to find novel ways of either finnancing a hydro station or charging for its output.

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2. Basic Test of Economic Viability

To compare any projects producing the same product which have different capital and operating costs there must be agreement on the long term cost of capital needed to evaluate. It is customary for those in the public sector, and probably particularly customary for the Corps of Engineers, to think of the long term cost of capital in terms of an interest rate. In other words it is customary to assume 100% debt financing at a single rate of interest. This rate is usually fixed in money terms. This type of calculation may be accurate enough in times of low or negligible inflation but it can lead to some major distortions at anything like the double digit inflation rates which have been experienced in the last decade. Indeed the rate of inflation experienced has often exceeded the rate of interest assumed as realistic in many calculations. The fact that projects in the public sector are financed by fixed interest borrowing does not mean that the rate of interest paid represents the opportunity cost of the funds invested. Indeed the cost of large Federal and State borrowing has been negative in real terms for many years in the past. To apply such rates to the evaluation projects will be tantamount to saying that projects are acceptable to the long term public interest even at negative real rates of return. This is patently nonsense. The only satisfactory rate of return for these calculations are real rates of return. What is an appropriate real rate of return for any particular government or entity is a matter for careful consideration and requires judgement of a high order. In principles, however, it is easy to see that some realistic long term rate of return needs to be chosen to discrimate between the various types of projects.

..../3

Assuming we have agreement on this rate for Alaska we are then in a position to compare Susitna with its rivals. If it transpires that the net present value of Susitna is significantly above that of any alternative, after allowing for any differential risks, then clearly the Susitna project is in the long term interests of Alaska. If Susitna does not pass this test further discussion is redundant. From the work done so far there is the likelihood that Susitna will pass this sort of test.

3. The Constraints of Power Regulations

It is usual in the United States for power authorities to be regulated by either or both of the State and Federal governments. We believe, although we are not certain, that the tariff structure resulting from the usual type of regulations is for the capital element of costs (allowed rate of interest plus sinking fund depreciation) to be fixed on either an annual or a unit basis. Operating costs are allowed in full. The operating costs for hydro electric projects is, of course, low in relation to capital cost but in the case of most other types of power generation they are high. In the case of coal fired station the actual cost of the coal is the largest single component of cost.

The effect of all this under inflation, particularly when energy prices are rising faster than inflation, is for the regulated tariffs of a hydro projects to be rising only gently (by the small operating cost component) while that for coal fired station can be rising very much more rapidly. In consequence the initial tariff on Susitna could be 60% above either present levels or the levels resulting from a coal fired station. In the longer term the discounted costs of coal can turn out to be very much higher.

..../4

This poses the obvious problem that in a conventionally regulatory environment it might be politically impossible to gain acceptance for Susitna because of political opposition to an initial major increase in charges to electricity consumers. Thus although Susitna may be a superior long term choice it may never get a chance to be selected.

Conclusions

a) It is clear that judged by conventional calculations Susitna may well be unfairly and unreasonably discriminated against. Therefore it is necessary to try to get the calculations done on a more realistic basis. This will involve agreement on an acceptable cost of capital to Alaska in real terms and to correcting any misunderstandings about the effects of inflation.

b) Once on agreed and realistic criteria Susitna is shown to be a candidate it must then be considered whether or not the present power regulations permit any variance in the way annual or unit tariffs are fixed. If it is desired to avoid a large increase in electricity tariffs if Susitna is brought in, it will be necessary to have a escalating tariff for Susitna starting at perhaps present levels or the levels from a coal fired station. These tariffs would not cover the full capital costs element for perhaps the first 10 to 20 years of Susitna's life, but this will not matter providing the shortfall is added, unrecouped capital cost and is reflected in a continually rising tariff. In this way the long term costs of Susitna power and the costs in each and every year will be no higher, and on average lower, than for a coal fired station. For this to happen Susitna would have to be empowered to borrow money in all the years of shortfall with the right to recoup it in later years plus interest. This may be

..../5

asking a great deal of the relevant regulatory authority. It is vital therefore to establish the rules governing Susitna and to explore the scope for varying them on the lines outlined above.

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FILE NOTE

SUSITNA

CBC/AS Conclusions on Relevant Financial and Economic Tests for Long-Lived Projects

1. Introduction

Long-lived projects such as hydro electric projects tend to have higher capital costs and lower operating costs than the main competitive projects. The traditional economic calculations such as those done by the Army Corps of Engineers tend to be of the type which produce an annual cost or a unit cost which is the same for every year of the project's life or every unit of product produced. Thus for say the 40 year project the capital element of this charge would comprise the required rate of return plus the sinking fund depreciation. (There are variants on this method which allow for regular or temporary inflation, but these do not alter the fundamental principles at work which have the main effect on the resulting calculations.) In the case of Susitna the application of this approach will result in a tariff which is initially 60% higher than the best coal alternative. The cost of coal to a coal-fired power station, however, can be reasonably expected to rise year by year in step with inflation perhaps assisted by the current strong upward trend in all energy prices. Thus the cost of electricity from a coal-fired station will rise to the point where it overtakes that of Susitna and continues well beyond it. The questions which must be considered are whether these conventional calculations give an acceptable and realistic picture; and whether there is the freedom to find novel ways of either financing a hydro station or charging for its output.

2. Basic Test of Economic Viability

To compare any projects producing the same product which have different capital and operating costs there must be agreement on the long term cost of capital needed to evaluate. It is customary for those in the public sector, and probably particularly customary for the Corps of Engineers, to think of the long term cost of capital in terms of an interest rate. In other words it is customary to assume 100% debt financing at a single rate of interest. This rate is usually fixed in money terms. This type of calculation may be accurate enough in times of low or negligible inflation but it can lead to some major distortions at anything like the double digit inflation rates which have been experienced in the last decade. Indeed the rate of inflation experienced has often exceeded the rate of interest assumed as realistic in many calculations. The fact that projects in the public sector are financed by fixed interest borrowings does not mean that the rate of interest paid represents the opportunity cost of the funds invested. Indeed the cost of large Federal and State borrowing has been negative in real terms for many years in the past. To apply such rates to the evaluation projects will be tantamount to saying that projects are acceptable to the long term public interest even at negative real rates of return. This is patently nonsense. The only satisfactory rate of return for these calculations are real rates of return. What is an appropriate real rate of return for any particular government or entity is a matter for careful consideration and requires judgment of a high order. In principle, however, it is easy to see that some realistic long

term rate of return needs to be chosen to discriminate between the various types of project.

Assuming we have agreement on this rate for Alaska we are then in a position to compare Susitna with its rivals. If it transpires that the net present value of Susitna is significantly above that of any alternative, after allowing for any differential risks, then clearly the Susitna project is in the long term interests of Alaska. If Susitna does not pass this test further discussion is redundant. From the work done so far there is the likelihood that Susitna will pass this sort of test.

3. The Constraints of Power Regulations

It is usual in the United States for power authorities to be regulated by either or both of the State and Federal governments. We believe, although we are not certain, that the tariff structure resulting from the usual type of regulations is for the capital element of costs (allowed rate of interest plus sinking fund depreciation) to be fixed on either an annual or a unit basis. Operating costs are allowed in full. The operating costs for hydro electric projects is, of course, low in relation to capital cost but in the case of most other types of power generation they are high. In the case of a coal fired station the actual cost of the coal is the largest single component of cost.

The effect of all this under inflation, particularly when energy prices are rising faster than inflation, is for the regulated tariffs of a hydro project to be rising only gently (by the small operating cost component) while that for coal fired station can be rising very much more rapidly. In consequence the initial tariff on Susitna could be 60% above either present levels or the levels resulting from a coal fired station. In the longer term the discounted costs of coal can turn out to be very much higher.

This poses the obvious problem that in a conventionally regulatory environment it might be politically impossible to gain acceptance for Susitna because of political opposition to an initial major increase in charges to electricity consumers. Thus although Susitna may be a superior long term choice it may never get a chance to be selected.

4. Conclusions

a) It is clear that judged by conventional calculations Susitna may well be unfairly and unreasonably discriminated against. Therefore it is necessary to try to get the calculations done on a more realistic basis. This will involve agreement on an acceptable cost of capital to Alaska in real terms and to correcting any misunderstandings about the effects of inflation.

b) Once on agreed and realistic criteria Susitna is shown to be a candidate it must then be considered whether or not the present power regulations permit any variance in the way annual or unit tariffs are fixed. If it is desired to avoid a large increase in electricity tariffs if Susitna is brought in, it will be necesssry to have a escalating tariff for Susitna starting at perhaps present levels or the levels from a coal fired station. These tariffs would not cover the full capital cost element for perhaps the first 10 to 20 years of

Susitna's life, but this will not matter providing the shortfall is added, unrecouped capital cost and is reflected in a continually rising tariff. In this way the long term costs of Susitna power and the costs in each and every year will be no higher, and on average lower, than for a coal fired station. For this to happen Susitna would have to be empowered to borrow money in all the years of shortfall with the right to recoup it in later years plus interest. This may be asking a great deal of the relevant regulatory authority. It is vital therefore to establish the rules governing Susitna and to explore the scope for varying them on the lines outlined above.

AS/CEW
17.12.80

cc: C B Chapman
J Gavin Warnock
Professor A J Merrett

0023

ACRES

cc: Lawrence
Gill
Hayden
Debelius

July 22, 1980

First Southwest Company
9th Floor
Mercantile Bank Bldg.
Dallas, TX 75201

Attention: Mr. John Hinton

Dear Mr. Hinton:

Re: Susitna Hydroelectric Project
Marketing & Financing Studies

I was pleased to make contact with you today and to have a brief discussion on the matter of the study task that we have in hand for the Alaska Power Authority on Susitna Hydroelectric Project.

We see the obvious need for close communication with First Southwest Company as financial advisors to the Authority and will plan an initial meeting with you during August. For your future guidance, I list the principal individuals within Acres American Incorporated with whom you may have contact on this project:

John D. Lawrence - Project Manager
Charles A. Debelius - Deputy Project Manager
J. M. Gill - Resident Manager, Anchorage
John W. Hayden - Study Director
J. Gavin Warnock - Task Manager, Marketing & Finance

John Lawrence and John Hayden operate from our Buffalo offices at Liberty Bank Building, Buffalo, NY 14202 (Telephone 716-853-7525; Telex 91-6423). Jim Gill is our resident representative at 2207 Spenard Road, Anchorage, AK 99503 (907-276-4888). Chuck Debelius and I operate from the Columbia office at the address shown below.

Correspondence on the project should be addressed to the "Project Manager" and marked for the attention of the individual concerned at his operating address.

We look forward to working closely with you on the project.
With kind regards,

Yours sincerely,

J. Gavin Warnock, Task Manager
Marketing & Finance

ACRES AMERICAN INCORPORATED
Consulting Engineers
Suite 329 The Clark Building
Columbia, Maryland 21044

Telephone 301-992-5300 Washington Line 301-596-5595

Other Offices Buffalo NY Pittsburgh PA Raleigh NC Washington DC

ACRES TOR

OCTOBER 14, 1980 P5700.07 11

Admin

ATTN: T. GWOZDEK

Outgoing
Oct 14/80

TASK II - MARKETING AND FINANCING

SEPTEMBER PROGRESS REPORT

WITH WORK INVOLVING ECONOMIC ANALYSIS REQUIRING PARTICULAR ATTENTION IN TASK 1.03 AND SUBSEQUENTLY IN TASK 6, THE AVAILABLE MANPOWER RESOURCES HAVE BEEN ALLOCATED IN THIS WAY. IT IS ANTICIPATED THAT DURING OCTOBER THE SENIOR PROJECT ECONOMIST WILL BECOME AVAILABLE FOR NEAR FULL TIME ASSIGNMENT OF EFFORT TO ALL TASKS INVOLVING HIS SPECIALIST INPUT.

DURING SEPTEMBER DR. C. B. CHAPMAN'S INPUT ON AMORTIZATION MODELS, AN OUTLINE OF RISK ANALYSIS REQUIREMENTS AND ON ECONOMIC EVALUATION PARAMETERS WAS MADE AVAILABLE AND WILL FORM THE BASIS FOR FUTURE WORK EFFORT. THE SEVERAL POINTS OF THE OVERALL STUDY WHERE RISK ANALYSIS WORK IS APPROPRIATE HAVE BEEN IDENTIFIED.

THE BIANNUAL REPORT ISSUED BY FIRTH + ASSOCIATES HAS BEEN REVIEWED AND WILL BE SUBJECT TO FURTHER DISCUSSION AT THE SEATTLE MEETING IN LATE OCTOBER.

WORK CONTINUED ON THE DATA DATHERING AND FORWARD PREDICTIONS OF BASIC ENERGY COSTS LINKED WITH OIL AND GAS PRICING FORECASTS TO THE END OF THE 20TH CENTURY.

CONSIDERATION IS BEING GIVEN TO THE SPECIFIC COORDINATION OF EFFORTS REQUIRED TO MAINTAIN BALANCED AND INTERLINKED PROGRESS ON ALL TASKS RELATING TO MARKETING AND FINANCING OF SUSITNA PROJECT.

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Susitna Hydroelectric Project

Task II - Marketing and Financing

29.12.80

Tony Merrett's recommendations following November 28th meeting in London attended by -

A Sykes
A J Merrett
C B Chapman
J G Warnock

1) In considering the financial analysis

- allow for "rolled-up" interest during construction
- allow substantial (and identified) provision for teething problems during initial operation (allow as contingency pool in capital cost allowance - increases investor confidence)

2) Provide brief analysis of likely system growth (if any) or support for such through basic economic growth. The purpose would be to build a case for early progress on project.

3) Examine the potential disbenefit of phasing the project

- balance off against advantages of finding alternative load
- note the benefit of Susitna availability should higher level of economic activity occur

4) Examine economic justification for allowing a gradually increasing cost of power despite its constant cost nature (hydroelectric).

5) Avoid capitalisation of any debt service as accounting practice is questionable and senior lending institutions would view this as an adverse factor in judging the robustness of project.

However, government could take the position that they can provide funds initially and recover later. e.g. provide funds at no interest for initial years and recoup rolled-up interest later. If project failed government could take over project after debt obligations had been met.

6) Financial analysis program should allow for the application of the most favourable accounting practices which can be applied (AJM questioned further whether program provides ROI as well as present value?)

Contact Report

GROUP Power & Heavy Civil
DIVISION 119
REGIONAL OFFICE Columbia

CONTACT John Hinton
TITLE
COMPANY First Southwest Company
ADDRESS Dallas, Texas (9th fl., Mercantile Bank Bldg. 75201

DATE OF CONTACT 7/22/80
CONTACT BY J. G. Warnock
TELEPHONE 214-742-6461 or toll fr 800-529-9053

CHECK OFF APPROPRIATE INFORMATION

TYPE OF CONTACT
- ☐ Repeat
- ☐ New
- ☐ Lead Only

PROSPECTS
- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ Write Off

FOLLOW-UP
- ☐ Yes
- ☐ No

Date
Who
Where
Who To See

DISTRIBUTION
BD File, ACS. Tor.
J Lawrence
J Hayden
C Debelius
P Tucker

PROJECT DISCUSSED ☐ NO PROJECT DISCUSSED ☐

PROJECT TITLE
LOCATION
DESCRIPTION
CAPITAL COST SCHEDULED TO BEGIN

SUMMARY OF DISCUSSION (Brief)

Subject: Susitna Hydroelectric Project Financing-Task 11

We learned of the appointment of John Hinton in charge of First Southwest Company's activities in Alaska from Griff Morris, principal of Booz, Allen, Hamilton at a meeting on July 21st. First Southwest Company's current resident representative in Alaska has resigned to take a municipal position, and John Hinton has been charged with appointing a replacement with he, himself, taking on responsibilities for the company's activity in the meantime.

John Hinton has been involved in the financial advisory role played by First Southwest with APA. He was well aware of our position on the Susitna contract and obviously pleased to have the contact advising of our intention to see First Southwest Co. involved in the study. He indicated that the chairman of the board of First Southwest was taking a prime interest in the undertaking and would wish to be involved in any meeting that we might wish to set up in the near future to discuss our relative roles.

We discussed the tax exempt revenue bond issue and Hinton outlined the steps they were taking to secure the necessary legislative changes. He was not hopeful of the outcome of the present bill when it reaches the House. He feels that the IRS interests are very heavily entrenched and will use the most extreme measures to limit any extension of the tax-exempt bond privilege. He bases his concerned pessimism on the fact that their previous efforts to secure changes in attitude of the members of the House of Representatives have been unsuccessful in view of the massive logistical task that is necessary to inform adequately the staff members who advise congressmen. First Southwest are themselves convinced of the validity of arguments presented by the Univ. of Illinois and other specialists in the field concerning the ultimate effect of broadening the tax exempt issue to cover all renewable energy resources. Apparently facts can be assembled which prove the assertions of IRS are wrong; and First Southwest are anxious to mobilize an even greater mass of opinion in support of their case. In this regard, Hinton mentioned specifically the possibility of Kaufman of Salomon Bros. assisting in the effort. (Kaufman is the bond specialist of Salomon Bros. whose opinions greatly influence the

Form 9A

market.)

Hinton proceeded to question the role of Salomon Bros. and I explained that, whereas they had entered the Plan of Study as subcontract partners with us, the scope and form of the study had changed quite significantly in subsequent months. Salomon Bros. were now "standing in the wings" in a position where we could count on their advice and help; but they would not, at this time, be assigned any fee reimbursement input.

It was agreed that an early meeting during August would be advisable with representatives of Acres American and First Southwest Co. reviewing the current position and endeavoring to arrange a consistent cooperative approach.

John Hinton confirmed that First Southwest Co. had, in fact, employed Griff Morris of Booz, Allen & Hamilton Inc. to prepare input to their case for tax exempt revenue bond support of hydroelectric projects.

SUSITNA HYDROELECTRIC PROJECT
Minutes of Task 11 Meeting
July 14, 1980

1. Attendance. A meeting was conducted in the Columbia, MD, office of Acres American Incorporated on July 14, 1980. Attendees included:

Professor Tony Merrett, Economics Consultant
Dr. Chris Chapman, Risk Analyst, AIMS
J. G. Warnock
J. D. Lawrence
C. A. Debelius
A. Vircol
S. Omkar
P. H. Tucker (Part-time)

2. Purpose. The purpose of the meeting was to formulate an overall approach to the conduct of financing and marketing studies (Task 11). In particular, the focus was upon the project overview (Subtask 11.01) and a proposed set of internal reports (Subtask 11.02) which together should provide the Alaska Power Authority (APA) with the necessary information to present a reasoned and coherent case on the Susitna Project as various decision points are faced. If the Susitna Project is ever constructed it must be seen to be "robust" and the financial community as well as State and Federal decision makers must see that the case for it is based on sound facts.

3. Giant Project Strategy. Professor Merrett drew a parallel with the long studied tunnel project which would connect England with mainland Europe. Some lessons learned may prove useful in the study of the Susitna Project:

a. Early efforts should be applied to identification and analysis of potential gaps which must be bridged if the project is to succeed. The views of opponents and proponents alike must be considered and early preparation is necessary to ensure that later challenges can be adequately addressed when and if they occur.

b. An overall strategy should be formulated now to minimize any future surprises. Even if our studies lead to a later conclusion that construction of the project is in the best interests of the State of Alaska, it will still be necessary to demonstrate convincingly that the conclusion is valid.

c. There is reason to believe the proposed project is in the national interest. It follows that the federal government may be a source of potential support.

d. One particularly difficult problem is that the project is likely to be heavily loaded at the front end. Government support (State and Federal) may be important in resolving this issue.

e. We should recognize realistically that our task is to prepare an "advocate's brief" based on the objective view that our case is right.

Some discussion ensured regarding the fact that Acres has intended from the start to be totally objective. It is inappropriate for us to be advocates unless we are ourselves convinced that the project should be built. Now that the study of alternatives has been removed from the Acres work, however, it appears our mission has changed to that of identifying the most viable Susitna Basin development which would meet future generation needs in the Railbelt. Recommendations as to whether a Susitna project should be built in lieu of some other alternatives will now be made by others.

4. Gaps. Dr. Chapman observed that it is important to understand all of the potential reasons for which the project might not be constructed, as well as to address each such reason in a project overview report. His thoughts paralleled those of Professor Merrett's regarding gaps. The following list of gaps was compiled and discussed (economic issues underlined):

1. Capital Costs
2. Low Cost Fuels
3. High Front End Loading
4. Need for Project
5. Vulnerability
6. Environmental Hazards
7. Native Land Ownership
8. Political Decisions - Alaska Undisturbed
9. Safety
10. Reliability
11. Federal constraints
12. Tax exempt bond issue
13. "Bigness" of Project (Socioeconomic issues)
14. Fixation of Alaska Political Decision

5. Bridges. The group discussed some of the ways in which potential gaps may be spanned. Professor Merrett asserted that if the case for Susitna is found to be clear and overwhelmingly sound, the project will be in the best interests of the State and Federal Governments. At that point, a position of advocacy would be synonomous with patriotism. Identified bridges include:

- Federal fuel constraints
- National oil dependence
- Resource conservation
- National emergency
- Quality of H. E. Dev. site
- Environmental credits
- Power portability (hydrogen)
- Basic need for utter reliability of supply

6. Observations. A number of random observations were made by various group members:

   a. Professor Merrett suggested that we use a computer program to find those parameters which might lead to minimization of the front end loading problem.

   b. The Fuel Use Act of 1978 and the way in which it is implemented in Alaska is an important consideration. J. D. Lawrence has requested an analysis in this area. (The memorandum has been prepared in draft form by P. M. Hoover, Coordinator for Task 10.)

   c. J. G. Warnock stated that one of the proposed internal reports in Subtask 11.02 will address front end loading. He also suggested that we must take the world energy situation into account as well as that for the Nation and the State. The total demand for Alaskan resources must be considered and the overall future economic climate must be carefully evaluated.

7. Procedure. Professor Merrett addressed some procedures which might be considered:

   a. We should define the "optimal commercial project". Such a project might have long term commercial viability and yield a 30% rate of return. Though it might be found, it would probably be politically vulnerable and might not provide bridges for all the identified gaps.

   b. Assuming that an "optimal commercial project" exists, we should attempt to find the "maximally viable project". This latter would be one which clearly could survive on all issues, has a reasonable rate of return (possibly 15% or so), may be appropriate to a low demand scenario, and is not politically vulnerable.

   c. If a "maximally viable project" exists, we could move up from it step by step as more facts become available to bridge gaps.

   d. The "maximally viable project" might be found through trial and error on an appropriate computer program which takes into account cash flow, rates of return, etc. A program previously written by Alan Sykes and Pratt Keeping is available in Toronto and should be checked out. J. G. Warnock will secure a copy of the program manual. Once we are able to satisfy the basic economic issues, we should then check the remaining gaps.

   e. Criteria for the maximally viable project establishes its economic "robustness". Such criteria might include:

      (1) Satisfaction of bond holders
      (2) Acceptable economic return (>12%)
      (3) Ability to finance (and cope with front end load)
      (4) No major economic problems (e.g., failing to need consumer demands and acceptable to utilities.

8. Front End Load Report. J. G. Warnock led a discussion of the contents of the internal report (Subtask 11.02) which might be prepared. Contents would have to cover such items as:

- Capital Costs
- Schedules
- Cash flows
- Escalation trends
- Differential fuel escalation
- Demand projections
- Susitna capacity
- Alternative energy cost and availability
- Risk asessments
- Sensitivity analysis
- Cost of Money
- Operation and Maintenance Costs
- State incentives (describe ways in which State could mitigate the front end load problem)
- Long term benefits which the State might enjoy

9. Adjournment. The meeting adjourned at 3:30 p.m.

C. A. Debelius

Distribution:

1 each participant
Project files

ACRES

OFFICE MEMORANDUM

TO: J. D. Lawrence

Date: June 2, 1980

File: P5700.11.02

FROM: J. G. Warnock

cc: D. C. Willett
C. A. Debelius
J. W. Hayden

SUBJECT: SUSITNA HYDROELECTRIC PROJECT
TASK 11 - MARKETING & FINANCING

With a view to initiating a detailed task description for the approach to Task 11, I recommend that we first reassess the Internal Reports for Management/Financial consideration under A 5.12(ii)b of the P.O.S. The provisional listing made in September 1979 was merely indicative of typical report headings and now that we have progressed to Week 21 of the study, the issues are more clearly defined and the needs which have to be addressed one year hence better understood.

The attached sheets break Task 11.02 into three major groupings of topics:

(1) Economic/Marketing Issues

(2) Risk Assessment

(3) Financing Issues

The treatment of these three major topics will ultimately overlap and proceed concurrently, but initiation of work should be spaced out at approximately 4 to 5 week intervals. This study of Economic/Marketing issues should be started immediately (Week 22), Risk Assessment in Week 27 (coinciding with Dr. C. B. Chapman's availability in USA), and Financing Issues should follow in early August (Week 31) when some preliminary conclusions from the Economic/Marketing element of the overall task may well be available.

We have seen the necessity for highly competent professional input at the outset on major economic issues, and we shall this week secure the advice and opinions of A. Sykes and A. J. Merrett on the recommended approach and the most appropriate participants judged from their view of the North American energy scene and knowledge of the requirements of major capital projects at this stage of development. As you know, Sykes is Group Financial Director of Willis Faber, but acts in a professional consultant role to Acres. He is the prime contributor to the "Giant Projects" treatise, which Eric Yould has reviewed with interest, and has particularly relevant experience gained from Churchill Falls and other major resource projects undertaken by RTZ Corporation.

Professor Merrett has now retired from London Graduate School of Business Studies, resides in New Jersey, and undertakes special consulting assignments, mainly in international energy and consumer demand fields. He is the co-author, with Allen Sykes, of a substantial book, "The Finance and Analysis of Capital Projects" (Second Ed., 1973, Longman).

While both Sykes and Merrett have offered their service as specialist consultants to Acres, there is the possibility that, on review of our needs, they may suggest others. It is essential, for instance, that the consulting group we put together contain adequate specialization in North American energy issues and in the needs and future of the Alaskan economy.

From the meetings planned for this week, which Dave Willett will hopefully attend, we intend to arrive at -

- an assessment of the needs for and identification of professional consultants in the field of economics
- a detailed plan for assessment of global energy impact and of the general economic future which might reasonably be expected for Alaska
- a methodology of determining the economic limits to Susitna
- an approach to determining Net Alaska Economic Benefits from Susitna and alternative power/energy sources
- preliminary ideas from the viewpoint of power economics of possible marketing strategies.

In addition, there are several facets on the general financing issue where Sykes' experience will be particularly valuable; e.g., in relation to completion guarantees (which was the major problem at Churchill Falls and which will require very careful consideration for Susitna). Sykes has studied both our P.O.S. and the Tussing critique and has substantive comment to make.

It is planned to have Dr. C. B. Chapman present at the meeting to make further plans for his availability in US this summer, to bring him up-to-date with the revised "post Tussing" Scope of Work, and to discuss with Sykes/Merrett the place of risk analysis in determining the economic limits to the project.

Following these initial meetings, it would be the intention that you would receive, prior to your departure for Anchorage on June 9, a summary of the Sykes/Merrett discussions and further thoughts on the detailed approach to Task 11.

Should it be appropriate for Professor Merrett to continue further personal consultation, we shall plan his schedule of activities which would no doubt

include an early presence in Alaska as soon as practical on his return to USA from his current sojourn in Ireland. Sykes further contribution during the next 4 to 5 weeks would have to be from his London base; but he would be available for meetings on this side of the Atlantic thereafter.

Attachments:

A - Subtask outline topics - Economic/Marketing

B - Subtask outline topics - Risk Analysis

C - Subtask outline topics - Financing Issues

Attachment 11.02.A (6/2/80)

SUSITNA HYDROELECTRIC PROJECT

TASK 11 - MARKETING AND FINANCING
SUBTASK 11.02

(Draft Outline)

INTERNAL REPORTS

ECONOMIC/MARKETING ISSUE

° Major elements of subtask topics and sequence of treatment:-

(a) - Global energy-economic assessment
(b) - General economic review US/Alaska
(c) - Integration of socioeconomic impact study (Task 7.05)
(d) - Overview of ISER findings (Tasks 1.01 and 1.02)
(e) - Economic/inflation cost pressure impact
(f) - Preliminary risk assessment (follows from Task 1.04)
(g) - Economic limits to project
(h) - Evaluation of alternative expansion sequences in relation to Financial/Marketing issues (follows from Task 1.04)
(i) - Determination of Net Alaskan Economic Benefits (based substantially on Task 1.06)
(j) - Establishment of viable marketing strategies
(k) - Consideration of alternative forms of power contract

° Inputs will be drawn from Tasks 1.01, 1.02, 1.04, 1.06, Tasks 6.01, 6.07, 6.31, Task 7.05, Task 9.

° Input will be provided both to Internal Reports and Project Overview (Task 11), to Task 1.01, 1.02, 1.04, 1.05, 1.06, Task 7.05, Task 9.05, Task 10.04, and Task 12.

The above topics would be appropriately assembled into specific Internal Reports, submitted for management review, and used to assemble the "Project Overview" in its successive updated issues.

Attachment 11.02B (6/2/80)

SUSITNA HYDROELECTRIC PROJECT

TASK 11 MARKETING AND FINANCING
SUBTASK 11.02

(Draft Outline)

INTERNAL REPORTS

RISK ASSESSMENT

° Major elements of subtask topics:-

(a) - Assessment of risk associated with alternative power sources and with viable expansion scenarios

(b) - Risk Analysis and determination of contingency plans for selected development

(c) - Consideration of:

--financing risk
--regulatory risk
--technological risk

(d) - Risk management organization and risk minimization policy

(e) - Inflation/schedule/escalation risk assessment

° Inputs will be drawn from Tasks 1.04, 1.05, 1.06, Tasks 6.01 and engineering/cost data developed from Task 6 and 9 and Task 9.05 in particular

° Input will be provided both to Internal Reports and Project Overview (Task 11) and to 1.04, 1.05, 1.06, Task 6.05, Task 9.05

The above topics would be appropriately assembled into specific Internal Reports, submitted for management review, and used to assemble the "Project Overview" in its successive updated issues.

Attachment 11.02.C (6/2/80)

SUSITNA HYDROELECTRIC PROJECT

TASK 11 - MARKETING AND FINANCING
SUBTASK 11.02

(Draft Outline)

INTERNAL REPORTS

FINANCING ISSUES

° Major elements of subtask topics:-

(a) Review of tax exempt bond financing issues
(b) Review of sources of security
(c) Financing requirements of Parties-In-Interest
(d) Security of project capital structure
(e) Overall risk analysis and contingency planning
(f) Completion guarantee
(g) Revenue assurance requirements
(h) Funding schedule for project
(i) Form of power contract and interrelationship with financing plan

° Inputs will be drawn from other Task 11.02 activity and from Tasks 6.01, Tasks 9.03, 9.04, and 9.05.

° Input will be provided both to Internal Reports and Project Overview (Task 11), to Task 6.31, and to Task 10 (Exhibits G & U).

In addition, financing consideration will be provided for Task 1.05.

The above topics would be appropriately assembled into specific Internal Reports, submitted for management review, and used to assemble the "Project Overview" in its successive updated issues.

April 15, 1980

Alaska Power Authority
333 West 4th Avenue
Suite 31
Anchorage, AK 99501

Attn: Mr. Robert Mohn

Dear Robert:

Re: Susitna Hydroelectric Project
Plan of Study - Task 11
Marketing and Finance

Following your letter of January 15, enclosing a listing of the important decision factors in the mind of the Governor and his immediate staff relating to large projects such as Susitna, there has been an exchange of correspondence concerning the level of effort in Task 11 which could provide adequately the necessary information. We ultimately felt it desirable to review the approach to, and output from, this task in order that there was all the necessary assurance that the Project Overview and its supporting reports would serve all the needs arising at the "go-no go" decision date and at subsequent stages of the study. This has now been done, and this letter sets out in some detail the views which we would like to put forward for your consideration.

In the original Plan of Study submitted by Acres American in September 1979, considerable stress was laid on the need for a comprehensive treatment of issues--many non-technical--which could influence the financing of the Project. The position was taken that there should be a broad interdisciplinary effort applied from the start of the study. This was recommended in order that there could be close integration of engineering, environmental, financial, insurance, economic and other specialty inputs in order to build a well-balanced, basic confidence in the overall viability of the project. Particular emphasis was placed at that time on the importance of well-qualified advisors on financial matters, and particularly on the applicability of tax-free revenue bond financing. We were fortunate in securing the support, in a consultative role, of Salomon Brothers possibly the most experienced financial firm in this field.

The terms of the arrangement made with Salomon Brothers during the preparation of the original Plan of Study provided for an equal share

between Salomon and Acres of the input to the main study effort for Task 11. It was not possible to assign a specific allocation of duties or services at that time, and a closely integrated effort was contemplated. It was intended to make whatever adjustments were appropriate to the 50-50 split in services and reimbursement as the detailed implementation of the plan proceeded.

We believe that the arrangement proposed in the original POS would have led to a most effective means of providing APA with essential elements of the study output at the various stages where decisions or redirection were required. The scope of the Task extended to preparation of draft documentation for the bond offering, as it has been found from past experience that the stringent discipline required for this in itself helps to develop confidence in the viability of the project. The overall scope of the marketing and financing study is, to some extent, a matter of judgment as to the true significance of this element of input in reaching decisions required for the project. The timing can certainly be subject to consideration in relation to the importance of decisions to be taken stage-by-stage. In our considered opinion, however, the effort should not be unduly constrained. Expenditures on this element of the study represent monies which would be truly well spent.

In the original POS, we presented Task 11 as one which made a continuing contribution throughout the period of study. The product of Task 11 takes form and focus through a Project Overview, a series of reports which is planned to present, as it evolves through the period of study, a cohesive and up-to-date presentation of the project issues for evaluation and decision. Curtailment of the Project Overview or its conversion into spasmodic summary report activity, does detract from its true value. While the economy in cost is important, the value of a properly conducted, continuing overview cannot be underestimated.

We believe it important at this stage to re-emphasize the true nature of the Project Overview. While many other elements of the Study now underway will result in reports and documentation attributed to Acres American as engineers to the Alaska Power Authority, the Project Overview should be the product of the Authority itself and carry your views and assessments. Acres American, with our advisors and sub-contractors, would make a very substantial contribution to the efforts of your "owners team" in formulating and updating the overview--in fact, undertaking the majority of the effort. The overview, furthermore, would be a consolidation of the output from the other tasks within the POS melded with relevant inputs from many other sources, some more accessible to the Authority than to Acres Project Team.

It may be recalled that, at the time that the revised POS was under

consideration, the question was raised as to the extent of participation of APA staff in the Project Overview and in the other products of Task 11. It was suggested that, while pursuing the policy of maintaining a "lean" organization, APA would be making staff additions, particularly in the financial area, who could make a significant participation to Task 11 activity. Furthermore, questions were raised regarding the timing of Subtask 11.11; and, with the intention of minimizing overall cost of the Phase I studies, deferments in effort and expenditure were agreed. Considerations such as these allowed Acres American to accept a substantial reduction in the reimbursement for Task 11, with this effort concentrated mainly in the final 18 months of the study period.

In making these changes to the original POS and its associated budget, the basic principles of near-equal levels of effort between Acres and Salomon Brothers was retained. You have now, however, indicated a desire to eliminate Salomon Brothers' contribution to Task 11, which further restricts the freedom of reallocation of work and costs of performing this assignment. It was intended that, as financial advisors, Salomon Brothers would take prime responsibility for those aspects outlined in "Plan for Financing the Susitna Project," detailed in the memorandum set out in Section C-1 of the supplemental information in the original POS. In addition, Salomon Brothers were to perform an active role in the formulation of the Project Overview and in the internal reports, particularly those dealing with

- Financing requirements of all parties and the completion guarantee
- Assessment of capital costs and schedules
- Project contingencies, risk analysis and planning
- Inflation and escalation assessment
- Risk management organization and risk minimization policy
- Security of project capital structure
- Economic impact review
- General economic review

The absence of the Salomon Brothers' contribution will result in transfer of this effort almost in full to Acres. We believe that the level of specialized input originally planned from Salomon Brothers in respect to tax-exempt bond issues and revenue assurance procedures can reasonably be set aside at this time. However, we recommend that the Authority should consider very seriously arranging for their eventual input on these topics during the final 18 months of study. The allowance in the revised POS of $112,000 for this effort may then, however, have to be subject to further negotiation in view of the

change in Salomon Brothers' overall role within Task 11. The level of highly specialized input required for this element of the task could no doubt be obtained from the Project's managing underwriter for debt financing and covered by normal fee arrangements if such a firm was appointed in time. Failing this, our recommendation is to retain, on a reimbursed consultative basis, specialists in the field.

As indicated in our letter of March 17, we have made a review of the marketing and financing programs set out in Task 11, taking into account your views regarding the extent of Salomon Brothers involvement and the requirement for addressing project evaluation factors in time to suit the Governor's needs. We find that little or no change to the present definition of tasks is necessary. The level of effort applied will, however, be subject to change for certain subtasks. For example, Subtask 11.03, Alternative Power Source Risk Analysis, will now treat the greater number and more varied range of alternatives leading to an increase estimated at 50% of the levels set at the time of the original POS. An allowance should also be made for review of Financing Risk under Subtask 11.06, and we recommend that the amount of $10,000 eliminated during POS review be restored. This will enable some continuing overview of Financing Risk to proceed prior to any later involvement of Salomon Brothers as suggested above. We note that First Southwest will be available to respond to questions of a fiscal nature.

With the needs now emerging for adequate support of the decision factors at the "go-no go" point in January 1981 and with the changes imposed on Salomon Brothers involvement, we have reassessed the costs of Task 11. The total estimated cost is now $338,300, as compared with $383,100 in the tabulated Cost Estimate in the revised Plan of Study, not including the amount of $142,000 set aside for Tasks 11.07, 11.08, and 11.09, which would be deferred for later consideration.

The expenditures now foreseen would be spread over the period of study as follows:

1980	$ 87,300
1981	193,000
1982	58,000

Internal report preparation (11.02) would begin in week 17, instead of 52, and would largely be complete and ready for final editing by week 106.

We attach Table 1, a summary of the changes which applied to Task 11 Marketing and Financing between the September 11 POS and the revised edition of February 4. Table 2 provides the weighting factors and "audit" trail which supports the revised cost for Subtask 11.01 and 11.02. Table 3 summarizes the further revisions which are now believed to be appropriate.

In summary, the costs for Task 11 may now be presented thus: -

Subtasks		Cost Estimate April 1980	Financial Advisory Cost Estimates
11.01	Project Overview Preparation and Update	$131,500	-
11.02	Internal Report Preparation	137,300	-
11.03	Alternative Power Source Risk Analysis	25,000	-
11.04	Susitna Base Plan Initial Risk Analysis	24,500	-
11.05	Susitna Base Plan Extension and Revision	10,000	-
11.06	Susitna Financing Risk Analysis	10,000	-
	SUBTOTAL	$338,300	-
11.07	Resolution of Tax Exempt Bond Issue	*($ 5,000)	$ 71,300
11.08	Identify Parties in Interest	*(20,000)	5,000
11.09	Revenue Assurance Procedures	*(5,000)	35,000
11.10	Liaison With APA Bond Underwriting Managers	-	-
11.11	Draft Documentation for Bond Offering Support	-	-
		$368,300	$112,000

*Bracketed amount would only be incurred in conjunction with corresponding work from financial advisor.

We trust that this explanation of the position now foreseen for Task 11 will serve its purpose and allow us to proceed on the recommended course to provide you with the necessary decision factors in January 1981 and a comprehensive and continuing Project Overview. An opportunity to discuss this element of our Susitna assignment will arise during the week of April 14 in Anchorage.

With kind regards,

Yours sincerely,

J. Gavin Warnock
Vice President and General Manager
Power and Heavy Civil Group

jgw/mc

TABLE 1

SUMMARY OF CHANGES TO TASK 11, MARKETING AND FINANCING

Subtasks		Cost in September 11 POS	Schedule September 11 POS	Cost February 4 POS	Schedule February 4 POS	Remarks
11.01	Project Overview Preparation and Update	$154,000	Throughout the study period	$99,500	Week 53 through 130	1. Reduces updates from 3 to 1. 2. Permits first overview to follow some major data collection rather than be concurrent with it.
11.02	Internal Report Preparation	$183,000	Throughout the study period	$91,600	Weeks 52 through 130	Reduces level of effort, much of which would have supported subsequent updates of the project overview.
11.03	Alternative Power Source Risk Analysis	$ 17,500	Week 0 through 30	$17,500	Weeks 20 through 50	Schedule change only.
11.04	Susitna Base Plan Initial Risk Assessment	$ 24,500	Week 53 through 75	$24,500	Weeks 53 through 75	No change.
11.05	Susitna Base Plan Extension and Revision	$ 20,000	Throughout the study period	$10,000	Throughout the study period	Cuts update effort in half on Risk assessment.
11.06	Susitna Financing Risk Analysis	$ 10,000	After license application	---	After license application	Removes effort entirely from "license only" approach in Section A6.
11.07	Resolution of Tax Exempt Bond Issue	$150,000	Weeks 1 through 20	$76,300	Weeks 30 through 52	Major reduction in Acres Effort. Puts issue primarily in the hands of Salomon Brothers.
11.08	Identify Parties in Interest	$ 25,000	Weeks 10 through 30	$25,000	Weeks 10 through 30	No change.
11.09	Revenue Assurance Procedures	$ 75,000	Weeks 100 through 120	$38,700	Weeks 100 through 120	Major reduction in Acres effort. Puts issue primarily in the hands of Salomon Brothers
11.10	Liaison with APA Bond Underwriting Managers	Integrated	Continuous	Integrated	Continuous	No change.
11.11	Draft Documentation for Bond Offering Support	$ 136,000	Commence month 6	---	After license application	Defers all work, in the "license only" approach in Section A6, essentially delays this effort for several years.

TABLE 2

REVISED ESTIMATES FOR - APRIL 1980 - SUBTASKS 11.01 AND 11.02

Subtasks	Original POS Dollar Value	Weight Factors	Unit Weight	Total Weight	Revised Value
11.01 Project Overview (Original)	$154,000	a. Research concurrent with initial data collection.	1.75		
		b. Preparation of first project overview.	3.0		
		c. Preparation of first update.	1.5		
	Weighting 8.5	d. Preparation of second update.	1.0		
				7.25	
					$\frac{7.25}{8.5} \times \$154,000$ = $131,500
11.02 Internal Reports (Original)	$183,000	a. Total months of activity June 80 through December '81	18		
		b. Support overview.	6		
		c. Support first update.	6		
	Weighting 48	d. Support second update.	6		
				36	
					$\frac{36}{48} \times \$183,000$ = $137,300