FILE COPY

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUBTASK 11.01 - PROJECT OVERVIEW

PROJECT MANUAL

FINAL DRAFT

Acres American Incorporated
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Read
12/16 -

OFFICE MEMORANDUM

TO: See Distribution

Date: November 17, 1980

File: P5700.15.1101

FROM: C. Debelius

cc:

SUBJECT: Susitna Hydroelectric Project
Project Manual, Subtask 11.01 - Project Overview
Final Draft

By memorandum dated October 31, 1980, each individual on the distribution list received a copy of the First Draft of the Project Manual. A Final Draft is attached for your use.

Some changes have been made since the first draft, primarily in terms of dividing the original Chapter 8 into two chapters, renumbering of most chapters, and changing some section headings. Any work you may have accomplished to date should not have been affected by these changes.

Your early and continuing attention to the duties assigned by the attached manual will be very much appreciated, for the completed Project Overview will be an important factor in the Governor's decision process in March 1981.

As I stated in my first memorandum, please do advise me as soon as possible if there is any problem in fulfilling these requirements.

C. A. Debelius, P.E.
Deputy Project Manager
Phone: 301-992-5300

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1 - INTRODUCTION AND PURPOSE

1 - INTRODUCTION AND PURPOSE

1.1 - Introduction

This Project Manual has been prepared by Acres American Incorporated as the basis for proceeding with Subtask 11.01, Project Overview, of Task 11, Marketing and Financing, of the Susitna Hydroelectric Feasibility Study. The entire study is being undertaken on behalf of the Alaska Power Authority.

A major decision point will be reached by the end of March 1981. At that time, the Governor of Alaska will determine whether the Susitna Hydroelectric Project Feasibility Study should be allowed to proceed.

Information available to the State will include not only that which has been provided by the Susitna team, but also that which will have been produced by the concurrent ongoing efforts of others. When the Plan of Study was prepared, it was clear to us that an assemblage of design transmittals, preliminary reports, subtask reports, and other data will exist in the Spring of 1981. While such information is, of course, essential for project purposes, it does not satisfy the need to present a clear, concise picture which ties together the myriad of activities in which we are now engaged and which clearly presents the issues. Subtask 11.01, Project Overview Preparation and Update, provides the vehicle for accomplishing this important purpose.

1.2 - Purpose

The purpose of this project manual is to provide the basis upon which Subtask 11.01 can be successfully completed. Work packages are described herein, duty assignments are made, a schedule is provided, and necessary manhour budgets are allocated.

1.3 - Approach

While virtually every member of the Susitna Project Team may have an opportunity to contribute to the contents of the Project Overview, major responsibilities fall upon the shoulders of certain chapter coordinators who must oversee the preparation of individual draft chapters. The general approach calls for submission of draft chapters about mid-December, after which time the entire report will be edited and rewritten as necessary to ensure consistency of style, balance in terms of content, and appropriateness of level of detail. A series of reviews is called for because the importance of the document cannot be understated. Indeed, many individuals in the Government of Alaska may form their entire opinion of Acres and its ability to meet the needs of the State based only on the Plan of Study itself and the series of Project Overviews described in Subtask 11.01. The final products must necessarily be of the highest possible quality.

It is anticipated that most of the contents of the Project Overview will be derivative of other project documentation and analysis. Thus, the chapter coordinator is generally expected to distill available data, fill in gaps which may exist, and provide a concise, readable product.

Three editions of the Project Overview will be prepared during Phase I of the total feasibility study. To the extent possible, each edition will contain the same outline (chapter and paragraph headings). Because complete information in all areas will not be available for the first edition, some chapter subheadings will not be addressed to any significant extent until the second or third edition.

2 - AN OVERVIEW OF THE PROJECT OVERVIEW

2 - AN OVERVIEW OF THE PROJECT OVERVIEW

2.1 - Plan of Study Extracts

At the end of this section, a number of pages from the Revised POS (September 1980) have been reproduced. Whereas the POS itself describes the subtask objectives and the overall approach, this project manual provides a detailed and comprehensive work plan for ensuring subtask objectives are accomplished.

2.2 - The End Product

When the Project Overview is distributed in mid-March, 1981, it should be a well planned compilation of material which places all the technical, commercial, economic, financial, contractual, environmental and other aspects in proper perspective. Emphasis will be placed on readability, and the overview must present the facts in such a way that a non-engineer can evaluate them readily. While some technical information will be offered, it is anticipated that readers desiring detailed data will be referred to the appropriate technical reports otherwise produced for the project. The format should be attractive and some color separation or half-tone shading may be employed to stimulate reader

interest. Simple graphics, photographs, layouts, and maps will be used liberally.

2.3 - Accomplishing Desired Results

If the desired results are to be accomplished on schedule and within budget, it will be imperative that each individual involved in the effort does his or her job properly the first time around. It is important, then, that all contributors to the effort read this manual with care and follow its instructions closely. Ample room exists for innovation and flexibility in terms of report content and provisions have been made for soliciting ideas from the Study Team, but items such as format, schedule, and budgets must be regarded as fixed.

A chapter coordinator has been assigned for each of the chapters discussed in detail in the work plans in Section 5, Chapter Work Plans. Duties of chapter coordinators are provided in Section 6. Assignments are made as follows:

CHAPTER	COORDINATOR
1. Introduction	C. Debelius (Editor)
2. Project Overview Summary	C. Debelius
3. Alaska Power Authority	J. Landman (with APA input)
4. History of Susitna Hydro Project	C. Debelius
5. Economic Scenarios and Parameters	S. Deiner
6. Market Area and Power/Energy Demand Forecasts	S. Deiner
7. Susitna Basin Studies	I. Hutchison
8. Generation Expansion Plan	P. Tucker
9. Susitna Hydroelectric Development	I. Hutchison
10. Environmental Considerations	K. Young
11. Analysis of Economic Impacts	S. Diener
12. Analysis of Economic Feasibility and Net Economic Benefits	S. Deiner
13. Power and Energy Marketing	J. G. Warnock
14. Public Opinion	N. Blunk
15. Licensing and Permitting	P. Hoover
16. Financial Feasibility Analysis	J. G. Warnock
17. Security of Project Capital Structure	J. G. Warnock
18. Organization and Management	C. Debelius
19. Implications of Proceeding	C. Debelius
20. Appendices as Required	C. Debelius

The general process by which the Overview will be compiled is illustrated schematically at Figure 2.1.

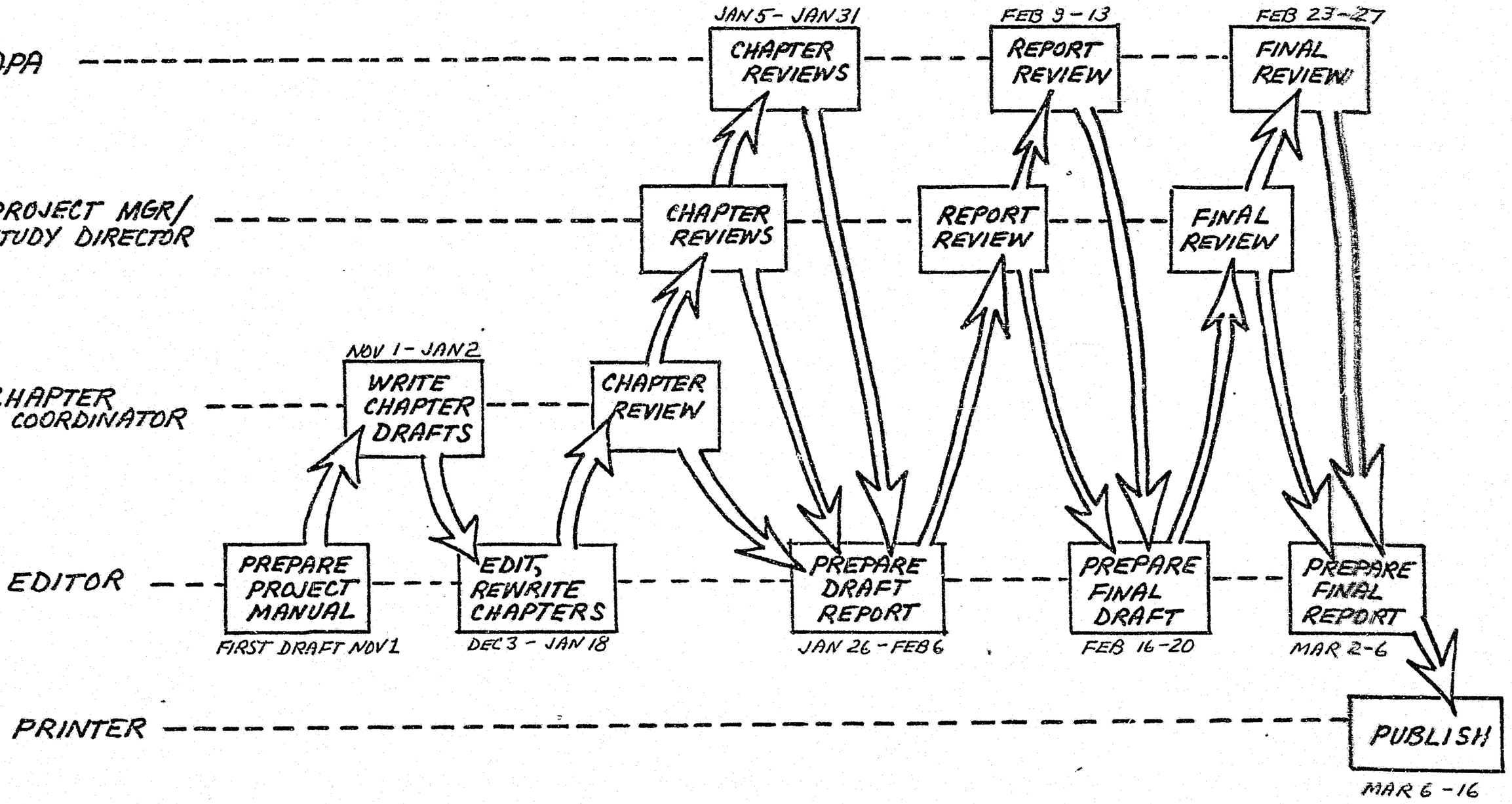


FIGURE 2.1 -- GENERAL FLOW PROCESS FOR PROJECT OVERVIEW

2.4 - Subsequent Editions

It is intended that two subsequent editions of the Overview will be produced in Phase I. The original structure as described herein will be retained, but individual chapters may expand or contract as new data is produced or as issues are resolved.

TAB 2-1

EXTRACTS FROM THE REVISED PLAN OF STUDY

R.2.3 - TASK 11: MARKETING AND FINANCING - REVISIONS

(i) Introduction

In response to the May 1980 Tussing Report and other public comment during the period April-June 1980, and also as a result of discussions with the Power Authority concerning the proposed marketing and financing studies, and finally the recent changes in Alaska State Legislation, the scope and scheduling of the Task 11 activities originally proposed in the February 1980 POS have been modified.

Essentially, the major modifications include:

- Advancement of schedule and increase in level of effort for the initial project overview and internal report documents
- Elimination of Alternative Power Source Risk Analysis from the Acres POS
- Advancement of schedule and increase in level of effort for the Susitna Basin Plan Risk Analysis
- Delay of schedule and reduction in level of effort for identification of Parties in Interest
- Indefinite delay of commencement of work in Resolution of the Tax-Exempt Bond Issue
- Advancement of schedule and increases in level of effort for Susitna Financing Risk Analysis
- Subtasks have been appropriately renumbered.

(ii) Revised Scope of Work (Task 11)

At the request of the Alaska Power Authority, the scope of work for Task 11 as proposed in the Acres' Plan of Study dated February 1980 has been amended to exclude the Alternative Power Source Risk Analysis (originally Subtask 11.03), and to defer until further notice the Resolution of the Tax-Exempt Bond Issue (originally Subtask 11.07). The originally proposed Subtasks 11.10, Liaison with APA Bond Underwriting Managers and 11.11, Draft Documentation for Bond Offering support have also been deferred. Subtask 11.12, Preliminary Financial and Marketing Study, subsequently proposed as a result of the Arlon Tussing Report, has also now been eliminated. Subtask numbering has been appropriately revised.

TASK 11: MARKETING AND FINANCING

(i) Task Objectives

To carry out a comprehensive economic evaluation of the Susitna Hydroelectric Project and to perform those economic, financial and marketing analyses of possible generation sequences capable of meeting the needs of the Railbelt to allow Susitna to be presented in proper perspective.

To establish the feasibility of financing the project and to develop an approach which provides optimum financing cost to Alaska Power Authority and the best overall benefit to the State of Alaska. An essential element of this task will be to build confidence in the project if it is shown to be the most appropriate for future development.

(ii) Task Output

At the request of the Alaska Power Authority, the scope of work for Task 11 as proposed in the Acres' Plan of Study dated February 1980 has been amended to exclude the Alternative Power Source Risk Analysis (originally Subtask 11.03), and to defer until further notice the Resolution of the Tax-Exempt Bond Issue (originally Subtask 11.07). The originally proposed Subtasks 11.10, Liaison with APA Bond Underwriting Managers and 11.11, Draft Documentation for Bond Offering support have also been deferred. Subtask 11.12, Preliminary Financial and Marketing Study, subsequently proposed as a result of the Arlon Tussing Report, has also now been eliminated. Subtask numbering has been appropriately revised.

The principal output of this task will be the Project Overview, which will incorporate comprehensive, but readily understood, documentation of major issues affecting the financing of the Project. This document will first be issued prior to the first decision point on whether or not Susitna studies should continue, currently scheduled for March, 1981. Two subsequent updates of the report will also be prepared through March, 1982. A series of internal management reports will also be prepared. Notable outputs unique to the marketing and financing issue include a series of risk analyses and procedures for risk control and minimization, as well as a taxation report addressing the important question of eligibility for tax-exempt bond issuance.

The main topics to be dealt with in the Project Overview and Internal Reports will include:

(a) Project Overview:

- General Description of Susitna Hydroelectric Project
- Review of Design and Construction Concepts and Methodology
- Review of Cost Estimates and Schedule

(a) Project Overview (Cont'd)	- Economic Evaluation of Project and Its Limits
	- Major Risks and Responses
	- Overrun Possibilities and the Security of the Project Capital Structure
	- Review of Environmental Constraints and Mitigation Plans
	- Development of the Organization for Management and Operation of Project
	- Preliminary Assessment of the Financial Plan and Requirements for Bond Offering Documentation
(b) Internal Reports For Management/ Financial Consideration (Provisional Listing):	- Economic Feasibility Study and Determination of Probable Economic Limits for the Project
	- General Economic Review
	- Review of Global Energy Economics
	- Economic Impact on the State of Alaska
	- Assessment of Capital Costs, Schedules and Program of Expenditures
	- Assessment of Project Operating Costs, and Maintenance/Replacement Expenditures
	- Assessment of Critical Engineering Tasks and Associated Risk Analyses
	- Project Contingencies, Risk Analysis, Policies and Planning for Mitigation of Risks
	- Escalation Assessment and Analysis of Capital Cost Overrun Possibilities
	- Security of Project Capital Structure
	- Financing Requirements of all Parties and for the Completion Guarantee
	- Evaluation of Alternative Markets Available for Susitna Output

(b) Internal Reports for Management/ Financial Consideration (Provisional Listing) (Cont'd)

- Evaluation of Alternative Options for Meeting Railbelt Power Needs (by others)
- Assessment of Socio-economic Aspects
- Review of Construction Contract Performance History in Alaska Relating to Cost and Schedule

The Internal Reports and the Project Overview will form the basis for any Bond Offering Memorandum (BOM) Support Documentation that may ultimately be required. Preparation of BOM documentation would normally begin after completion of the Susitna Feasibility Studies and submission of an Application for Licensing to the FERC.

The subject matter of Internal Reports and the Project Overview will also be such as to address the requirements of the BOM documentation, which provisionally will include:

- Primary Volumes:
  - Power Contracts
  - Engineering Report
  - Statutory Agreements, Legal Approvals and Land Claims
  - Summary of Corporate Documents
  - Technical Abstract and Engineer's Certificate
  - Construction Cost Estimate Summary
  - Construction Schedule and Project Expenditure Program
  - Insurance
  - Financing Summary
- Support Volumes:
  - Overall Project Organization
  - Engineering Reports (Construction)
    - -- Access and Site Preservation
    - -- Environmental Standards, Monitoring and Control
    - -- Quality Assurance and Testing Programs
    - -- Support Facilities and Logistics

- Support Volumes: (Cont'd)
  - Engineering Reports (Operations)
    - -- Operating and Replacement Expenditures
    - -- Chargeable Corporate Expenditures
  - Labor Agreements
  - Plan for Alaska Manpower and Procurement Content
  - Risk Management and Minimization
    - -- Risk Analysis and Control
    - -- Risk Minimization
  - Taxation Report
  - Legal Report
  - Review of Giant Projects
    - -- Financing
    - -- Construction and Engineering
  - Alternative Energy Sources

(iii) List of Subtasks (revised)

Subtask 11.01 - Project Overview Preparation and Update
Subtask 11.02 - Internal Report Preparation
Subtask 11.03 - Susitna Base Plan Initial Risk Analysis
Subtask 11.04 - Susitna Base Plan Extension and Revision
Subtask 11.05 - Susitna Financing Risk Analysis
Subtask 11.06 - Resolution of Tax Exempt Bond Issue
Subtask 11.07 - Identify Parties in Interest
Subtask 11.08 - Revenue Assurance Procedures
Subtask 11.09 - Liaison with APA Bond Underwriting Managers
Subtask 11.10 - Draft Documentation for Bond Offering Support

Note that Subtasks 11.03 through 11.10 are renumbered following amendments to scope of work, and 11.06, 11.09 and 11.10 activities are currently deferred.

(iv) Subtask Scope Statements

It is recognized that if the Susitna Project is selected as an appropriate element in the growth of generating capacity in the Railbelt Region, it is most likely to proceed on the basis of a project financing. Essential to this will be an accurate determination of revenues and properly established energy sales agreements. Furthermore, all project risks must be identified, their potential impact assessed, and appropriate contingency plans and provisions made.

In the approach recommended, a close working arrangement will be established from the outset of the study between technical, economic and financial advisory groups. The interaction between these interests will be developed through a series of specific tasks which provide the Authority with successively more comprehensive outlines and definition of a financing plan.

As the study proceeds, the specific requirements for supporting material essential for financing will be identified and its preparation undertaken in close collaboration with the selected bond underwriters. Work undertaken prior to license application will provide the foundation upon which bond offering support documentation can later be prepared. The completeness and excellence of bond offering support documentation is judged to be of crucial importance to a successful project. The work involves numerous, complex and interlinked tasks; and only comprehensive pre-planning can achieve the desired result.

In order to present the project in proper perspective to the many parties involved--Federal, State and local agencies, regulatory authorities, power purchasers, potential lenders, institutions, political groups and public--a comprehensive overview will be prepared. This will initially be in general terms, but will endeavor to cover all the interrelated elements of the project. As work proceeds, successive editions of the overview report become more explicit and complete. In the event that a Susitna development is shown to be feasible and most appropriate for satisfaction of electrical energy needs in the Railbelt, studies and explanations which may seem unnecessary to the sponsoring group may well be needed to convince third parties and engender their enthusiasm.

It is furthermore vitally important to disperse the knowledge among those employed on the project that all potential problems have been thoroughly examined and solved. If, on the other hand, no Susitna development is found to be warranted, careful and reasoned analysis of the appropriate alternative will be necessary to ensure that the State's decision to proceed with some other project (or projects) is based upon thorough studies which establish technical, economic and financial feasibility as well as environmental acceptability.

The work of the interdisciplinary group incorporating technical, economic, financial, and other skills would, furthermore, demonstrate clearly for management consideration the clear economic limits to the Susitna project or some other alternative (e.g.,its maximum acceptable cost) and the time period in which its accomplishment must be regarded as a certainty before other measures to meet Alaska's power needs would have to be adopted. While examination of the negative limits of the project could be regarded as an expression of pessimism or recognized to be even, in the ultimate, capable of cancelling the project, we consider such analysis vital. It should serve to establish the general robustness of the project and to demonstrate beyond doubt to the various governments, investors, lenders, completion guarantors, concerned interests and others the viability and acceptability of any recommended scheme for development.

The approach to be adopted would derive full benefit from previous financing efforts for major capital projects requiring capital funding of $1 billion or more. Experience has demonstrated the need for close and effective interaction between the owner of such projects and the various elements of his advisory team with the wide range of interests involved.

(v) Risk Assessments

As the various elements of the project study reach the appropriate level of completion, it is planned to apply a rigorous analysis of risk and to recommend contingency provisions. The approaches to be used would involve modern techniques of analysis and probability assessment and deal with cost, schedule, technical and other controlling elements of the project.

Risks to be assessed include those associated with the planning, design and construction of the project as well as the financing of it. There are a number of basic project financing risks which must be addressed. The analysis, assessment, and, where appropriate, quantification of these risks will be accomplished under Subtasks 11.03 through 11.05. Financing risks include:

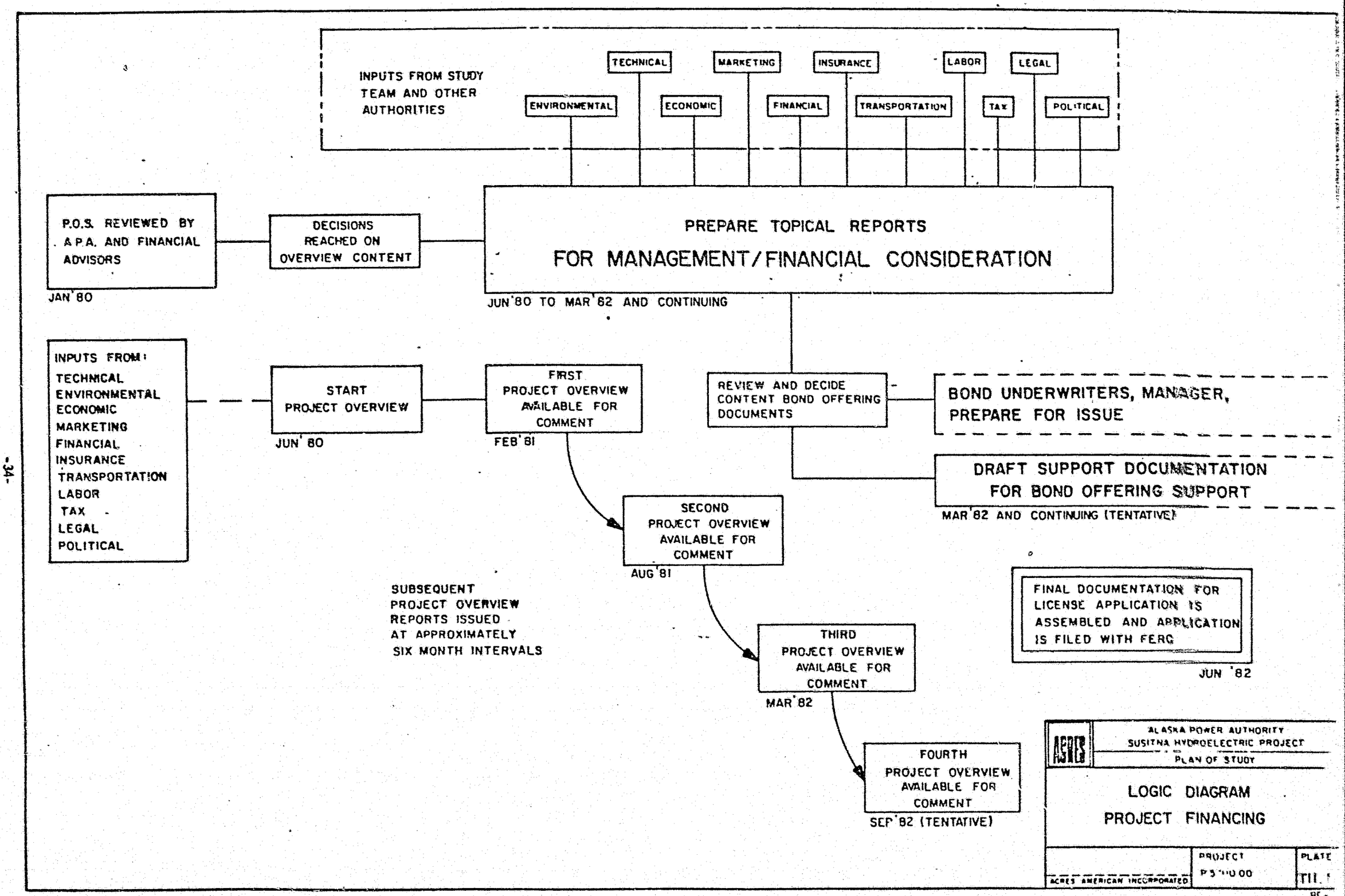
-- Cost overruns prior to completion
-- Late completion and non-completion
-- Partial or total post-completion outages
-- Customer failure to provide anticipated cash flows
-- Regulatory risks, particularly insofar as new regulations affect the operation (and, therefore, of course, the profitability and/or consumer costs)
-- Technological risks, particularly insofar as the extent to which new or relatively unproven technology may increase financing difficulties

(vi) Logic Diagram

A logic diagram is shown in Plate T11.1 to illustrate the manner in which various documents are prepared, interrelated, and assembled.

(vii) Investment Banker Inputs

In the February 1980 POS, it was proposed that Salomon Brothers, an investment banking firm whose knowledge and experience of financing large undertakings is unchallenged, would be retained as financial advisors to Acres. Although the advice of Salomon Brothers and of the First South West Bank, financial advisors to the Power Authority will be sought from time to time on financial matters, no formal arrangement for participation of Salomon Brothers in the Susitna studies is contemplated at this time.


INPUTS FROM STUDY TEAM AND OTHER AUTHORITIES
TECHNICAL
MARKETING
INSURANCE
LABOR
LEGAL
ENVIRONMENTAL
ECONOMIC
FINANCIAL
TRANSPORTATION
TAX
POLITICAL
P.O.S. REVIEWED BY A.P.A. AND FINANCIAL ADVISORS
JAN '80
DECISIONS REACHED ON OVERVIEW CONTENT
PREPARE TOPICAL REPORTS FOR MANAGEMENT/FINANCIAL CONSIDERATION
JUN '80 TO MAR '82 AND CONTINUING
INPUTS FROM:
TECHNICAL
ENVIRONMENTAL
ECONOMIC
MARKETING
FINANCIAL
INSURANCE
TRANSPORTATION
LABOR
TAX
LEGAL
POLITICAL
START PROJECT OVERVIEW
JUN '80
FIRST PROJECT OVERVIEW AVAILABLE FOR COMMENT
FEB '81
SECOND PROJECT OVERVIEW AVAILABLE FOR COMMENT
AUG '81
THIRD PROJECT OVERVIEW AVAILABLE FOR COMMENT
MAR '82
FOURTH PROJECT OVERVIEW AVAILABLE FOR COMMENT
SEP '82 (TENTATIVE)
SUBSEQUENT PROJECT OVERVIEW REPORTS ISSUED AT APPROXIMATELY SIX MONTH INTERVALS
REVIEW AND DECIDE CONTENT BOND OFFERING DOCUMENTS
BOND UNDERWRITERS, MANAGER, PREPARE FOR ISSUE
DRAFT SUPPORT DOCUMENTATION FOR BOND OFFERING SUPPORT
MAR '82 AND CONTINUING (TENTATIVE)
FINAL DOCUMENTATION FOR LICENSE APPLICATION IS ASSEMBLED AND APPLICATION IS FILED WITH FERC
JUN '82
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
PLAN OF STUDY
LOGIC DIAGRAM
PROJECT FINANCING
ACRES AMERICAN INCORPORATED
PROJECT
PLATE

Subtask 11.01 - Project Overview Preparation and Update

(a) Objective

To provide a key project document which reviews all major aspects of the project and its objectives, determining in principle whether these can be successfully met; provide through successive updating a continuing reassessment of the project's overall viability and financibility as various milestones are reached; and allow multidisciplinary inputs from many sources to be properly coordinated into a cohesive and well-balanced definition of the project.

(b) Approach

This Subtask will be performed by a small team who will receive inputs from many multidisciplinary sectors involved in the study. The team will be directed by experienced senior staff familiar with the approach essential to projects of such magnitude and the complex financing arrangements that these involve.

Initially the Project Overview will concentrate on descriptive outlines of the project objectives, the site for development and the project facilities. Capital costs and schedules will be at the outset preliminary only, but nonetheless considered adequate to determine initial overall viability. The Project Overview will identify the sensitivity to various risks and outline methods of mitigating these and possibly removing some from further consideration. The initial Project Overview Report will be scheduled to be available for review by all parties concerned prior to the March 1981 decision point on whether or not to continue the Susitna Feasibility Study. It will also be available for review prior to the public meeting scheduled in the spring of 1981, and it will incorporate as comprehensive a review of issues involved in judging Susitna as can be assembled at that time.

The Project Overview and its subsequent revisions in updated form at intervals throughout the study will be presented from the "owner's viewpoint" and will consider all important aspects which affect the viability, acceptance, financibility and the undertaking of construction of the hydroelectric facilities. The first update will be completed approximately nineteen weeks after the Susitna Development Report is prepared under Subtask 6.05.

In achieving its goal of preparation of a comprehensive, clearly understandable, concise and accurate overview of the project, the Project Overview Task Force will call on specific inputs from many sources, including:

- Technical
- Environmental
- Economic
- Marketing
- Financial
- Insurance
- Transportation
- Labor
- Tax
- Legal
- Political

Typical elements of the Project Overview are listed in Subparagraph (ii)(a) of Task Output above.

The final issue of the Project Overview during the study phase will provide a valuable summary document to bridge into subsequent licensing and preliminary design phases of the work. It will be available prior to the March 1982 decision point on whether or not to proceed with a FERC license application for the Susitna Project. Eventually its content will have significant value for the Bond Offering Support Document and a variety of other applications, including preparation of project brochures as part of the public participation program.

(c) Discussion

The concept of the continuously updated "Project Overview" is of relatively recent origin and has developed from the special needs of large complex projects. It is necessary to address the complexity with a well planned compilation of material which places all the technical, commercial, economic, financial, contractual, environmental and other aspects in proper perspective and demonstrates that all vital problems are being sensibly addressed. The overview is planned to provide a consistent thread of documentation through the whole study process and, if construction should proceed, to provide a datum baseline for judging actual performance of the many elements in relation to the plans.

As the documents will have to serve many varied and non-technical interests, the language must be appropriately chosen and carefully edited for clarity and ease of understanding. Extensive use will be made of graphics, drawings, maps and pictorial illustrations. Production and binding will reflect the level of economy appropriate to draft and eventually final documentation.

(d) Schedule

First Project Overview	Weeks 22 through 63
First Update	Weeks 64 through 85
Second Update	Weeks 86 through 117

3 - PROCEDURES

3 - PROCEDURES

3.1 - Format

The format for submission of draft chapters will be in accordance with Susitna Project Procedure 7.1. It is anticipated that the final Project Overview format will be more closely akin to that found in standard textbooks (i.e., only chapters are numbered and subparagraph headings are centered, but not numbered). Even so, retention of the standard numbering system up to final report preparation will facilitate the review process and will also permit us to more easily access the appropriate portions of Lanier disks when corrections are necessary.

For the Overview, all drawings, maps, photographs, etc., will be referred to as Figures. Both Figures and Tables will be numbered consecutively within a chapter (e.g., Figure 7.1, Figure 7.2, Table 7.1 will be the first figures and table in Chapter 7).

3.2 - Existing Drawings

Certain drawings or maps which have been produced for other purposes (design transmittals, subtask reports, etc.) may be appropriate for inclusion in the Project Overview. When the chapter coordinator believes an existing drawing should be used, he will furnish a copy of the drawing with the submission of his draft chapter. The copy should contain a notation as to the location of the original drawing. If changes are recommended to better serve the Project Overview purposes, such changes will be marked in red on the copy furnished, but the original will not be changed until a final decision is made as to which plates should appear in the report.

3.3 - Photographs

Good photographs are particularly useful in carrying a message and they also tend to stimulate interest in the report. Chapter coordinators should attempt to provide photographs whenever possible. If a photograph or a slide is provided, a caption should be attached to it. The caption should explain what the picture is intended to demonstrate and should identify individuals shown by name. Pictures illustrating activities are particularly useful (e.g., an internal review meeting in progress; an animal being tagged; a drilling operation; a weather station being checked; seismology equipment being serviced).

In every case that a photograph is provided, the task coordinator should review it carefully and critically to ensure it represents the best interests of Acres and APA (e.g., no safety violations, no environmental desecration, etc.).

In the event that the Chapter Coordinator determines that a picture would be particularly useful, but is unable to locate one, he should include a recommendation with his draft chapter. The recommendation should describe the picture he would like to use. If possible and appropriate, we will attempt to have a few high quality photographs taken.

3.4 - New Graphics and Drawings

Chapter Coordinators may determine that a new illustration or drawing should be prepared for the Overview. In each such case, only a decent sketch of the proposed graphics will be provided with the draft chapter. Final graphics or drawings will only be produced when the decision has been made as to whether they should be included in the Overview. For graphics in particular, we will attempt to use the same illustrator throughout in order to enhance consistency in appearance.

3.5 - Submitting Text

All draft chapter text will be submitted in double space draft form. A copy of the Lanier disk will also be furnished to the Editor if the draft chapter has been typed on a Lanier.

3.6 - Reviewer Comments

Reviewers are encouraged to make comments and recommend changes. Notes may be made directly on the draft or additional sheets may be provided. Under no circumstances, however, will the reviewer physically cut up and rearrange the typed version (when this happens the word processing operator is unable to perform her function efficiently). If paragraphs should be moved around, notes should be placed on the draft explaining what is to be moved and where.

3.7 - Changing Chapter Content

Chapter Coordinators may find that certain portions of the work plan are inadequate to convey the message which they believe is required. Subparagraphs may be added whenever the Chapter Coordinator deems it appropriate, but no subparagraphs shown in the work plan may be deleted. When new subparagraphs are added, they will be put in the appropriate place and given an alphabetic subnumber so that the integrity of the designated subparagraph structure can be maintained.

(For example, a new subparagraph is deemed appropriate to be placed between designated subparagraphs 6.1.6 and 6.1.7. The added subparagraph will be designated 6.1.6.A. A second added subparagraph would be 6.1.6.B, etc.)

The purpose of this approach is to ensure that other Chapter Coordinators who may wish to refer to information contained elsewhere will always be able to cite the proper location.

3.8 - Citing Sources

Most of the material in the Overview will actually be a distillation of materials otherwise produced for the Project. It is particularly important at

the initial draft stage that sources of information are properly referenced -- both to facilitate verification of contents and to provide the basis upon which readers may be led to detailed reports which support the concise information in the Overview.

Footnotes will be numbered consecutively, beginning with 1/ for each chapter.

3.9 - Direct Quotations and Use of Major Portions of Existing Reports

In some cases, whole paragraphs or pages may be lifted from other reports which have previously been prepared. It is not necessary to retype such material at the draft chapter stage, but xeroxed pages will be supplied and a note will be appended citing the original source document.

3.10 - Bibliography

A bibliography will be supplied with each chapter and all applicable references will be listed, whether footnoted in the text or not.

4 - OUTLINE AND FILE INDEX

4 - OUTLINE AND FILE INDEX

An outline of the Project Overview is provided on succeeding pages, together with a file index number for each chapter. Draft chapters are parts of a major report within Task 11. The Project Overview itself is assigned file number 5700.15.1101. Individual chapters will carry subnumbers corresponding to chapter numbers. (Thus, Chapter 3 has the file number 5700.15.1101.03).

P5700.15.1101

OUTLINE OF PROJECT

OVERVIEW

File Number

8. GENERATION EXPANSION PLAN

P5700.15.1101.08

10. ENVIRONMENTAL CONSIDERATIONS P5700.15.1101.10

10.1 Environmental Impact on Recommended Development

10.1.1 Fisheries

10.1.2 Wildlife

10.1.3 Vegetation

10.1.4 Recreation

10.1.5 Archaeological Issues

10.1.6 Other Impacts

10.2 Lands Affected by Power Generation and Transmission Facilities and Impacts on Native People

11. ANALYSIS OF SOCIOECONOMIC IMPACTS P5700.15.1101.11

11.1 Introduction

11.2 State-Wide Impacts

11.3 Regional Impacts

11.4 Local Impacts

12. ANALYSIS OF ECONOMIC FEASIBILITY AND NET ECONOMIC BENEFITS P5700.15.1101.12

17. SECURITY OF PROJECT CAPITAL STRUCTURE P5700.15.1101.17

17.1 Introduction

17.2 Overall Risk Analysis and Contingency Planning

17.3 Completion Guarantee

17.4 Revenue Assurance Requirements

17.5 Form of Power Contract and Interrelationships With Financing Plans

17.6 Role of the State of Alaska in the Susitna Hydroelectric Power Development

18. ORGANIZATION AND MANAGEMENT P5700.15.1101.18

18.1 Role of Alaska Power Authority in Development of Susitna Hydroelectric Power Project

18.2 Project Management

18.3 Management of Engineering and Construction

18.4 Policies and Procedures: Management Information Systems

18.5 External Boards of Review

18.6 Quality Assurance

18.7 Public Participation and Information Program

18.8 Labor Relations

18.9 Security

18.10 Organization for Operating Phase

19. IMPLICATIONS OF PROCEEDING WITH STUDY OF SUSITNA HYDROELECTRIC POWER DEVELOPMENT P5700.15.1101.19

20. APPENDICES AS REQUIRED P5700.15.1101.20

5 - CHAPTER WORK PLANS

5 - CHAPTER WORK PLANS

Work plans for each chapter are provided in this section. Chapter Coordinators must as a matter of course be thoroughly familiar with the plans for content of assigned chapters. Beyond that, however, this work plan affords an opportunity to make reference to other portions of the report, thereby eliminating redundancy which would exist if each chapter had to stand alone.

In every case that a number of pages is estimated, it is assumed that one "page" consists of one 8 1/2" x 11" sheet with standard margins, typed in double space draft on the Lanier word processor. Figures and Tables are not included in the page number estimate. The page estimates are to be considered as a guide only; there is no restriction on increases or decreases as long as the work plan content is substantially satisfied. Remember, though, that it will be easier to delete portions that are too detailed than to add to incomplete information.

5.1 - Chapter 1 - Introduction

(i) Objective

To introduce the reader to the Project Overview, explain the purpose of the document, and initiate the concept of a continuing series of which this edition is the first.

(ii) Approach

Four sections will be prepared as follows:

(a) 1.1 Outline of Purpose of Project Overview (1-2 pages)

This portion begins with a statement that the document has been prepared by Acres for APA in accordance with the POS. The Project itself is introduced and the contents of Subtask 11.01 as contained in the Revised POS are summarized. Basically, this first part of the report has to say WHY it has been prepared. The fact that this is a distillation of detailed technical data is introduced here and the preliminary nature of results to date is emphasized.

(b) 1.2 Initial Emphasis - Decision Whether or Not to Proceed with Study (1-2 pages)

Having said WHY in 1.1 above, we must now introduce the concept of a decision point and the factors which must be taken into account. A stylized graphic showing various inputs (e.g., Project Overview, Development Selection Report, ISER Forecast, Public Comment, Agency Recommendations, etc.) to a decision point with alternative outputs for proceeding and terminating may be used to illustrate the point. Mention is made here of the fact that implications of proceeding and important issues are discussed in Chapter 19.

(c) 1.3 Evolutionary Process for Subsequent Issues of the Project Overview (3 pages)

Introduces the idea that the Overview will be published on a regular basis if the project proceeds. The general form and structure will remain constant, but the emphasis on any given chapter and the results reported can be expected to evolve as the study continues.

The second decision point in April, 1982, is introduced here and note is made of new inputs which must be considered, including the Railbelt Alternatives Study, Intertie Study, and Tidal Power Study.

1.4 Outline of Form and Content (2-4 pages)

Discusses the complexity of the decision making process. Observes that a variety of diverse disciplines have been brought to bear and that this report attempts to tie them together in a meaningful way

for decision makers. Notes that the report is summarized in Chapter 2 and that the organization of the text is designed to establish the basis upon which the study is being done (Chapters 3, 4), consider the needs for energy in the Railbelt (Chapter 5 and 6) examine how Susitna might contribute to satisfaction of those needs (Chapters 7 and 8), and then discuss from a preliminary standpoint the technical, socio-economic and environmental information obtained to date (Chapters 9 through 11), etc. A flow diagram containing a series of questions and parenthetical reference to chapters may be employed.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Prepare draft	40	Dec. 31
(b) Edit/rewrite	None	None
(c) Review Chapter draft	8	Jan. 23

5.2 - Chapter 2 - Project Overview Summary

(i) Objective

To provide an executive summary of the most important information in the Overview.

(ii) Approach

Subparagraphs will be prepared -- one for each chapter. Each chapter will be summarized as succinctly as possible (1-3 pages per) and a few graphics, tables, etc. may be simplified or summarized as illustrations. This Chapter will not be prepared until completion of chapter reviews for all other chapters.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Prepare draft	40	Feb. 6
(b) Edit/rewrite	None	None
(c) Review Chapter draft	*	Feb. 13

*Included in draft report review.

5.3 - Chapter 3 - Alaska Power Authority

(i) Objective

To document the authority under which the APA operates.

(ii) Approach

Five sections will be provided as follows:

(a) 3.1 Outline of Legislation Creating the Authority (1 page)

A concise statement of the legal basis upon which APA is founded. This statement may cite specific statutes, but it will avoid legal phraseology and simply make it clear that APA has the authority to perform its general functions. If a copy of the appropriate law is considered necessary, it should probably appear as an Appendix (See 5.20).

(b) 3.2 Organization (3-4 pages)

This section provides a brief description of the duties of various APA staff members in much the same way as we normally describe duties of various project team members in our proposals. Names of incumbents will not be used with position descriptions. As a

minimum, description will be provided for Chairman of the Board, Member of the Board, Executive Director, Director of Finance, Director of Engineering, Public Participation Officer, Native Inspector and Project Engineer. An organization chart should be sketched and provided with the preliminary chapter draft submission. The final paragraph in this section may list incumbents. (This approach will facilitate later update versions since only incumbents may need to be changed -- unless, of course, APA reorganizes).

(c) 3.3 Existing and Planned Activities (1-2 pages)

Provide a general review of the types of projects for which APA has responsibility. It is not necessary to cite every project and, in fact, it is preferable to write in terms of categories (e.g., reconnaissance studies, feasibility studies, licensing, construction, financing, etc.). It would be appropriate to note that as of December 31, 1980, five reconnaissance studies were in progress, two feasibility studies, etc. (Numbers are for illustration only. Facts must be obtained). If APA has plans for changes either in breadth or depth of scope in the future, such plans should be cited.

(d) 3.4 Procedures Adopted for the Study of the Potential of Hydroelectric Power Resources of the Susitna River (2-3 pages)

Note that the process by which a consultant was selected is covered in paragraph 4.7. Section 3.4 should discuss such matters as the form of contract used, the conduct of Public Participation by APA itself, the relationship with ADF&G and other state agencies, APA's role in the intertie study, relationship with the Office of the Governor on the Railbelt Alternatives Study, the manner in which control by APA is exercised (including external review, offering major decision points to the Governor, incorporating public concerns, etc.).

(e) 3.5 Alaska State Legislative Act "Relating to Power Projects of Alaska Power Authority and the Susitna River Hydroelectric Project" (2 pages)

Just as in Section 3-1, this should be a brief review of the legislation in layman's words. An appendix may be used to actually publish the Act if desired.

(iii) Illustrative Materials

Consideration should be given to providing photographs of an APA Board Meeting in progress or of an External Review Board Meeting. The organization chart sketch noted at (ii)(b) above is a requirement.

(iv) Getting the Information

Portions of this chapter will probably have to be based on materials obtained directly from APA. The Chapter Coordinator should seek help from the Susitna Project Office in Anchorage in collecting information. It is appropriate to seek an early review by APA of the chapter when it is in presentable form but correspondence transmitting this material should be prepared for the signature of the Editor (Deputy Project Manager).

(v) Schedule and Budget

	Manhours	Completion Date
(a) Prepare draft	40	Dec. 3
(b) Edit/rewrite	15	Jan. 2
(c) Review Chapter draft	8	Jan. 9

5.4 - Chapter 4 - History of Susitna Project

(i) Objective

To provide a brief historical review of events leading to the selection of Acres and to introduce the reader to the Plan of Study.

(ii) Approach

Much of the subject matter for this chapter is already covered in Subtask 6.01 closeout report. Materials provided should be consistent with that report as well as with the Development Selection Report.

Eight sections will be provided as follows:

(a) 4.1 The Study Area (4-pages)

Begin with a statement of Acres' concept of the preferred Susitna development as presented in more detail later in the report.

This section is a brief introduction which locates the project area and offers a broad overview of the setting. Much useful material is available from the 1975 Interim Feasibility Report prepared by the Corps of Engineers (pp. 7-27). As a minimum, paragraphs are required to define the Susitna basin, discuss climate, topography,

hydrology, fisheries, birds, mammals, and vegetation. This is by no means a detailed environmental description. Bear in mind that environmental considerations will be discussed in more detail in Chapter 10.

A simple map should be provided, but detail should be minimized. An illustration similar to the one shown at Figure 4.1 may be useful.

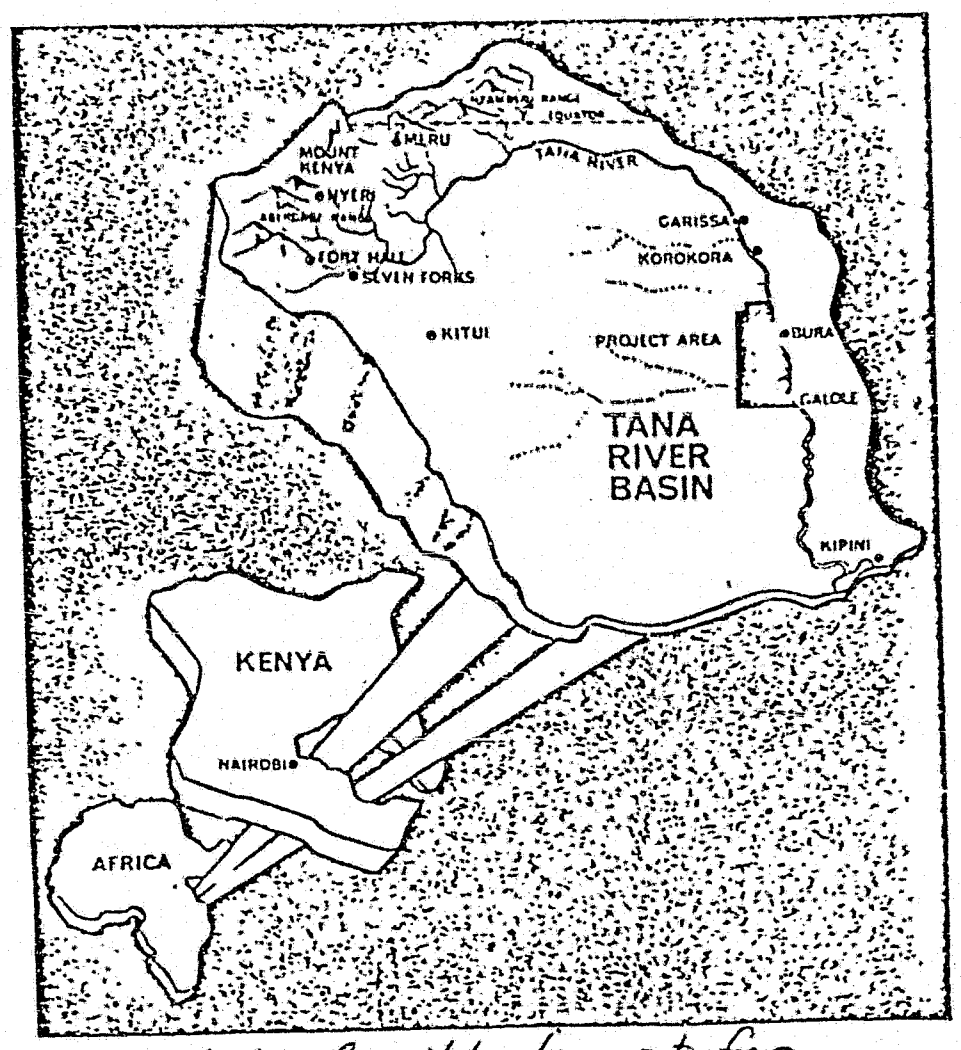


FIGURE 4.1. Possible format for basin location map.

In addition, one or more photographs showing the rugged terrain should be supplied.

(b) 4.2 Early Studies of Hydroelectric Potential (1 page)

Cite all Susitna studies leading up to the USBR reports of the early sixties. Briefly mention results. Also note other major projects such as Rampart.

(c) 4.3 USBR, Department of the Interior, Studies (2-3 pages)

Discuss the principal findings of the USBR report, particularly that which was produced in 1974. Provide a map locating dam sites proposed by USBR and others. Refer to a Table which should be prepared listing possible developments, by whom proposed, dam heights, installed capacities, date of study.

(d) 4.4 U.S. Army Corps of Engineers Studies (4-5 pages)

Once again, describe the principal findings of the Corps studies. Discuss items in particular which may now have changed (for example, load forecasts). This section must be succinct, but it also must set the stage for later more detailed descriptions of technical and environmental studies which have been oriented toward the Watana and Devil Canyon dams as the more probably viable sites. Refer to the map and table introduced at (c) above.

(e) 4.5 Kaiser Proposal for Development (1 page)

Briefly describe this study. Make a point of the fact that it considered industrial development as an adjunct to hydro development. Point out that no field data exists for the Kaiser sites.

(f) 4.6 Interests of Alaska Power Authority (2 pages)

Describe how after formation of APA (refer to Chapter 3), this Susitna Project fell within its bailiwick. Discuss the procedures which Alaska used to determine whether the State should fund Federal activities or employ a private consultant. Tell how statements of qualifications were sought and three consulting firms were funded $40K to prepare detailed plans of study. Describe the presentations and testimony in September 1979 and selection of Acres as one option with Corps of Engineers as the other. The APA report on public meetings should be considered a primary reference for information in this paragraph as well as in paragraph 4.7 below.

(g) 4.7 Selection of Consulting Engineers (1 page)

Discuss the November 1979 APA meeting, the Corps presentation, and the recommendation by the APA board that Acres be selected. Note Governor's acceptance and signing of contract in late December 1979.

(h) 4.8 Plan of Study 1980-1982 (5 pages)

Emphasize that the document is dynamic and has evolved since it was submitted in September 1979.

Discuss contents briefly -- only down to Task level. Explain how it was reviewed and how the reader can refer to the POS itself if more

detail is needed. Bring out the fact that alternatives are now being studied in detail by others. Note scheduled decision points.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft chapter	60	Dec. 8
(b) Edit/rewrite	None	None
(c) Review	8	Dec. 19

5.5 - Chapter 5 - Economic Scenarios and Parameters in Alaska

(i) Objective

To provide a unified discussion of economic scenarios and parameters that influence various aspects of the study, including energy demand and load forecasts, generation planning, cost estimating, socioeconomic impact, and economic and financial feasibility. To ensure that sets of assumptions are internally consistent both within and across these tasks.

(ii) Approach

The first five sections (10 pages) will concern preliminary and conceptual issues, global energy economics, U. S. energy supply and demand and U. S. energy price forecasts. The remaining four sections (10 pages) will concern Alaska- and project-specific issues: Alaskan prospects for economic growth (including ISER assumptions); projections of Alaskan energy prices, both market and opportunity (shadow) values; forecasts of non-energy costs, and the establishment of market costs of capital and real discount rates applicable to current dollar cost of power analysis and real dollar economic evaluations, respectively. The parameter values provided in the first Project Overview will be based on

work up to November 30 1980. Additional values and revisions to this information will be incorporated regularly and systematically into the on-going production of internal management reports and subsequent editions of the Project Overview Reports. It is expected that later editions of the Project Overview Report will maintain the format of the currently proposed documentation.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft Chapter	60	December 19
(b) Edit/rewrite	30	December 31
(c) Review	8	January 12

5.6 - Chapter 6 - Market Area and Power/Energy Demand Forecast

(i) Objective

To provide an overview of the Railbelt market area, the existing supplies and suppliers of electric power, and existing and forecast demand for electric energy and power.

(ii) Approach

The chapter will be organized into seven sections as follows:

6.1 - Market Area (2 pages)

6.2 - Utility Structure and Present Generating Capacity (3 pages)

6.3 - Electricity Demand Profiles (3 pages)

6.4 - Past Forecasts of Power and Energy Demand (3 pages)

6.5 - ISER Energy Forecasts (5 pages)

6.6 - Load Forecasts (5 pages)

6.7 - Potential for Load Management and Energy Conservation (4 pages)

Particular emphasis will be placed on appropriate lower and upper bounds for incremental power and energy demand and the assumptions underlying ISER's energy demand forecasts. Section 6.7 will address load management and conservation only in a manner consistent with Subtask 6.35.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft Chapter	60	December 19
(b) Edit/rewrite	30	December 31
(c) Review	8	January 12

5.7 - Chapter 7 - Susitna Basin Studies

(i) Objective

To review technical data collection activities and the process by which various potential Susitna Basin developments were evaluated.

(ii) Approach

This chapter will necessarily deal with a substantial amount of highly technical data. It is important to keep in mind that we are presenting this information so that it can be readily understood and absorbed by decision makers whose education and experience are not necessarily technically oriented. Five sections are required as follows:

(a) 7.1 Introduction (2-4 pages)

Review the massive efforts undertaken in the past year to gather and evaluate important data. Describe how a camp was assembled, the major transportation support requirements, and the number of people involved in the collection of technical data. Place some emphasis on the fact that Alaskan involvement has been extensive. Discuss the fact that field investigations are by no means complete and that an even larger data collection effort will come in the next year if the State decides to proceed with the Project. Refer to Chapter 9 where the selected development plan appears in more detail.

(b) 7.2 Technical Data

(1) 7.2.1 Hydrology (3-5 pages)

Provide a basin description and streamflow data. An annual hydrograph showing mean, low, and high flows of at record Watana or Devil Canyon would be a useful illustration. Briefly discuss temperature, precipitation, ice, wind-driven waves, sedimentation. Particularly emphasize constraints which hydrological studies may place on basin development.

(2) 7.2.2 Site Exploration and Geology (3-5 pages)

Vs

Begin with a geological overview of the Basin. Describe what investigations were conducted during the first year of the study and what may be concluded from them. State what uncertainties remain and what steps will be taken to resolve them. Also address availability of materials and any initial work done on slope stability. Note that adits may be required to determine with more confidence the ability to construct certain dam types, but that they will not be constructed unless other analyses demonstrate that such types would be favored.

(3) 7.2.3 Seismic Considerations (3-6 pages)

V.S.

Discuss the WCC program as accomplished to date and the plans for next season. Provide a simplified preliminary map with major faults shown thereon. Review work done on Reservoir Induced Seismicity. Briefly discuss how results of seismic studies affect dam designs.

(c) 7.3 Selection of Dam Sites and Design of Structures (8-10 pages)

Refer to the map mentioned in Section 4.3 of Chapter 4. Briefly summarize (perhaps in tabular form) known characteristics of alternative dam sites. Describe the procedure used to select particular ones for more detailed consideration. Several examples of preliminary site layouts (if available) should be furnished. State which dam types appear to be favored at Watana and Devil Canyon and why.

(d) 7.4 River Management Studies and Optimization of Ultimate Capacity (1-2 pages)

Describe the manner in which we are looking at staged development and how various concepts contribute to or constrain full basin development. Provide any initial information which may have been obtained regarding flow regulations which may apply for mitigation and other purposes.

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(e) 7.5 Tunnel Alternative to Devil Canyon Dam (6-8 pages)

Describe the process we are using to consider this alternative. Several layout sketches would be valuable, particularly one for the alternative we most favor at this time. State advantages and disadvantages of using a tunnel. It may be appropriate to provide a table laying out various tunnel options, possible relative costs, capacities of the project, miles of river preserved, etc. A basin plan and elevation with tunnel alternatives marked thereon would be useful. Provide an initial assessment of how the tunnel alternative compares with other developments.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft chapter	90	January 2
(b) Edit/rewrite	30	January 16
(c) Review	12	January 23

5.8 - Chapter 8 - Possible Generation Expansion Plan

(i) Objective

To review viable candidates for inclusion in a future generation system for the Railbelt; to develop apparent optimum generation systems under varying assumptions; to provide a preliminary assessment of system environmental impacts.

(ii) Approach

Six sections and eight subsections will be provided as follows:

(a) 8.1 Introduction (1-3 pages)

(b) 8.2 Options Available to Meet Capacity Requirements (8-12 pages)

To the extent possible, the use of the term "alternatives" will be avoided. Note that the actual alternatives study is being done by others. Explain that any hydroelectric development on the Susitna River would necessarily be a part of a generation system. Recognizing that a variety of developments is possible and that staged development may well be a reasonable way to avoid having too much excess capacity at any given time, note that it has been

necessary to examine likely ways in which the current system will grow to meet various demand scenarios. The economic viability of various development schemes in the Susitna Basin must be tested against generation expansion sequences which do not include a Susitna development. Each possible type of generation should then be discussed in turn, and, where fuels are required, it is appropriate to address availability and costs in the future. Two or three paragraphs should be provided for each of the following topics:

8.2.1 Coal-Fired Steam Powered Generation

8.2.2 Gas Turbine Power Generation

8.2.3 Combined Cycle Generation

8.2.4 Diesel Power Generation

8.2.5 Impact of the Fuel Use Act

8.2.6 Review of Other Potential System Components; Municipal Solid Waste, Wood-Fired, Peat-Fired, Biomass Fueled Power Generation, Cogeneration, Methanol Fuels

8.2.7 Decentralized Power Generation Facilities Including Review of Wind Energy Potential and Other Renewable Sources

8.2.8 Hydroelectric Alternatives to Susitna Power Development

It must be noted that sections 8.2.6 and 8.2.7 will not be addressed in the March 1981 Project Overview. For these two sections it will be sufficient to use a sentence to the effect that this work is now being accomplished by others and it will be reported on when results become available (probably the final edition of the Project Overview).

One or two summary tables listing the possible system components, capacities considered, capital costs ($/kW), operating costs, etc. should be provided. These could very well be along the lines of tables used by P. Tucker in the October 15 briefing for R. Mohn. This section will be largely derived from information developed for Subtasks 6.32, Thermal Generating Resources, and 6.33, Hydroelectric Generating Sources. Photos of plant types, a few layouts (if they are prepared) and similar illustrations would be useful.

(c) 8.3 Environmental Analysis and Assessment of System Components (3-5 pages)

This section should report the results of Subtask 6.34, Environmental Analysis. Recognizing that the draft chapter is due before the completion of Subtasks 6.32, 6.33, and 6.34, we should report our results as "preliminary" or "tentative" and candidly state that work is continuing in these areas. If evaluation matrices are developed for Subtask 6.34, an abbreviated example should be included with submission of the text. When important analytical work has not yet been completed, it is appropriate to provide a few paragraphs describing what will be accomplished in the near future. The screening criteria should be stated.

(d) 8.4 Distribution of Load and Generating Capacities (2-3 pages)

A map containing graphic symbols for locating each of the potential system components in the Railbelt should be provided. It may be

appropriate to also use this map as a reference in discussions for paragraph 7.2.7 (Decentralized). Discussions should be provided relating known load centers and relative sizes to potential generating source locations. To the extent that imbalances exist, address the implications. To the extent that peaks are not coincident from one load center to another, it will be useful to demonstrate how capacity factor might improve with an interconnected system.

(e) 8.5 Generation Planning Without Load Management and Conservation, 1980-2010 (4-5 pages)

Briefly describe the Generation Planning Model and how it is being used. (Note that the actual preliminary results will be discussed in Section 8.7)

(f) 8.6 Generation Planning With Load Management and Conservation, 1980-2010 (2-3 pages)

Summarize the work accomplished in Subtask 6.35, Load Management and Conservation. Provide sketches showing the impact on future demand and on load duration curves under various assumed measures. A summary table may also be useful. It would list possible measures and the expected impact they might have on demand and load shape as well as the degree of difficulty in implementing them.

(g) 8.7 Generation Plans With and Without Susitna (5-8 pages)

Base this section on work done in Subtask 6.36, Generation Planning. Explain what preliminary runs show. If insufficient information is

available on actual runs when this section is prepared, provide a description of what we intend to do and how we expect to use the results. If it can reasonably be expected that useful information will have been developed by February 16 (when the final draft is prepared), provide a paranthetical summary of what you intend to supply at that time. We may make changes to the initial version, but the submission prepared to meet schedules noted in (iii) below should be complete and accurate as of the time of submission.

(h) 8.8 Preferred Generation Plan (2-4 pages)

If we have arrived at a preferred generation plan as of the time that this chapter is prepared, briefly describe it. If no conclusion has yet been reached, describe how we plan to arrive at a preferred plan.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft chapter	100	January 2
(b) Edit/rewrite	30	January 16
(c) Review	12	January 23

5.9 - Chapter 9 - Susitna Hydroelectric Development

(i) Objective

To provide a description of the selected Susitna Basin development plan.

(ii) Approach

This chapter will be widely read because it will present the concept which is most likely to be analyzed in detail after the Governor's decision point and because it will reflect our current thinking on what project may ultimately be constructed. Much of the material contained in the Development Selection Report can be condensed and used in this chapter. Section descriptions are as follows:

(a) 9.1 Introduction

Note that Chapter 7 reviewed a range of alternatives and the process by which they were analyzed. Chapter 8 looked at how possible developments might best meet the needs of the Railbelt for electrical power and energy in the future. This Chapter describes the development initially selected for more detailed analysis. Note that the selection is preliminary and that various project features may be expected to evolve over succeeding months as parallel studies, particularly environmental and continuing technical field investigations, lead to changes which may better satisfy mitigation requirements and physical conditions.

(b) 9.2 The Selected Development

(1) 9.2.1 Dam Selection (and tunnel, if appropriate) (8-10 pages)

Provide layouts for the selected development. Describe staging and the order in which various stages would be developed. Describe dam types, heights, and briefly explain why they were chosen.

(2) 9.2.2 Spillways (2-3 pages)

Describe purpose of spillways. Briefly describe the spillway selected for each stage of development and the reason it is preferred.

(3) 9.2.3 Power Generation Facilities and Equipment (3-5 pages)

Discuss location and type of powerhouse selected for each stage. Describe type of units to be used and capacity, intakes, gates, etc. Note location of transformer gallery and switchyard. Provide elevations of selected powerhouses if they have been prepared by the time the chapter is due for completion. (If certain drawings are under preparation but are not yet ready, provide the editor with a brief note as to what may be available by late February).

(4) 9.2.4 Access Roads and Cofferdams (2-3 pages)

Discuss the fact that these would be some of the earliest project features if a decision is finally made to construct. Discuss which access road route has been selected (if selection has been made). If we are still undecided as to the preferred access road, provide a map showing routes now being considered and state that the final selection will take place.

Briefly introduce purpose cofferdams serve. Discussion should take into account project implications for cofferdam selection (e.g. length of diversion tunnel, ability to incorporate cofferdam into dam structure).

(5) 9.2.5 Construction Schedules (1-3 pages)

Discuss approximate times when each stage of the development is expected to be completed. Note that later editions of the overview will provide more detail on schedules after the development concept is more fully analyzed.

(6) 9.2.6 Contract Package and Contracting Policies (2-4 pages)

Note differences between fast track and deliberate approaches. Briefly discuss considerations applicable to alternative packages and policies. Note that this topic will be expanded in the final Phase I Overview.

(7) 9.2.7 Cost Estimate (2-5 pages)

Emphasize the very preliminary nature of estimates now being used in the evaluation process. State that a detailed estimate will be made after the development plan is selected.

(8) 9.2.8 Program of Expenditures (2-4 pages)

Review study costs to date, amounts budgeted to complete, and Phase II costs (as described in the POS). State any assumptions we are using to determine annual expenditures during the construction period. Note that these assumptions will be modified and more definitive expenditure program would be derived after we determine cost estimates and schedules for the selected plan.

(9) 9.2.9 Analysis of Risks and Assessment of Project Contingencies (2-3 pages)

Review what we plan to do in this area. Observe that this work is proceeding, but that detailed risk analysis for the selected plan must necessarily follow from the plan itself. To the extent that risk types can be determined, it is appropriate to list major ones we are considering (risks of over or under-building, seismic, etc.).

(c) 9.3 Review of Transmission Development Plan (Title only - no text)

(1) 9.3.1 Transmission System Planning for the Railbelt (1-2 pages)

Provide a map of current transmission system, intertie route, Susitna route(s). (This map can then be referred to in para. 9.3.2 as well.) Briefly discuss current transmission system and possible future expansions, including the intertie. Note when route selection will be made.

(2) 9.3.2 Susitna Hydroelectric Project Transmission Facilities (2-3 pages)

Discuss the status of transmission studies as accomplished to date. State in particular what measures will be taken to improve transmission system reliability.

(3) 9.3.3 Cost Estimate (1 page)

Note that this estimate has not yet been completed. However, for planning purposes, we use the Corps Estimate, which, in 1980 dollars, is _____.

(4) 9.3.4 Program of Expenditures (1 page)

Briefly discuss how this will be derived in future studies.

(5) 9.3.5 Analysis of Risks and Assessment of Project Contingencies (1 page) See (6) 8.2.6 above.

(d) 9.4 Logistics, Transportation and Construction Facility Requirements (2-4 pages)

Provide a brief description of logistics support for the study itself (the camp, helicopter use, etc.). Include a photograph of camp facilities. State that more details as to construction camp size and location will follow after plan selection.

(e) 9.5 Operating Costs and Replacement Expenditures (1 page)

Note parameters used in the screening process for these costs. Observe that more precise determinations will follow after plan selection.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft chapter	90	January 2
Edit/rewrite	30	January 16
Review	12	January 23

5.10 - Chapter 10 - Environmental Considerations

(i) Objective

To review the status of environmental studies, describe impacts as they are currently known; to review land status and impacts on Native people and organizations.

(ii) Approach

This chapter will contain two sections, and a number of subsections. Good photographs of animals, vegetation, environmental data collection, etc. are encouraged.

(a) 10.1 Environmental Impact on Recommended Development (Title only)

To facilitate our presentation, a number of major categories have been selected for discussion. In each category, the minimum required material should include a review of the entire Phase I program (based on the POS), a summary of the findings to date, an initial assessment of environmental impacts, a discussion of any mitigation measures we have begun to consider, and a brief overview

of the Phase II work which must follow license application. If any major problems which had not been expected are now known, these should be reported as well. Categories and page estimates are as follows:

10.1.1 Fisheries (6-10 pages)

10.1.2 Wildlife (6-10 pages)

10.1.3 Vegetation (5-8 pages)

10.1.4 Recreation (4-6 pages)

10.1.5 Archeological Issues (5-8 pages)

10.1.6 Other Impacts

A number of questions were provided to APA by the Governor's Office. To the extent it is possible to answer these questions in our first Project Overview, responses (even very preliminary ones) should be provided:

Environmental Quality

(1) To what extent will the project affect the environmental health and/or safety of the populace? What is the extent of both short-term and long-term consequences of the project?

(2) What is the extent of irretrievable resource loss or irreversible environmental consequences?

(3) What are the provisions for environmental monitoring? Surveillance? Quality control?

(4) Will the project affect subsistence resources? (Change in migration patterns? Loss of species? Dislocation? Availability?)

(5) Will the project affect designated or specifically defined wilderness, historic, watershed, recreational or scenic areas?

(6) Will the project affect fish and wildlife populations or their habitat? How? Short-term vs. long-term effects?

(b) 10.2 Lands Affected by Power Generation and Transmission Facilities and Impacts on Native People (4-8 pages)

This is an initial review of the land status. Consider including a map showing the extent of lands set aside as a power reservoir, lands owned by Native Corporations, BLM land, State land, park land, etc. This section may be fairly short in the first Project Overview and may be expanded in later editions.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft chapter	80	January 2
(b) Edit/rewrite	20	January 16
(c) Review	8	January 23

5.11 - Chapter 11 - Analysis of Socioeconomic Impacts

(i) Objective

To provide preliminary information on socioeconomic impacts of the Susitna Project.

(ii) Approach

Four sections will be provided.

This chapter should review the Phase I POS program for socioeconomics and should provide a status report on information assembled to date. To the extent that it is possible to address the following questions (furnished by the Governor's Office to APA), they should be answered. Even preliminary or tentative responses are important:

Socioeconomic

(1) What changes would be generated in real per capita personal income for current resident Alaskans over the life of the project (construction and operational phases?)

(2) What is the employment impact of the project?

(a) What proportion of jobs are expected to be occupied by current Alaskans?

(b) What are the characteristics of these jobs (seasonality, skill level, occupational category, short-term, long-term?)

Community Well-Being

(1) What changes, if any, can be expected in the quality and/or availability of governmental goods, services and/or facilities? What state and locally-financed services would be required? (Education? Health services? Transportation? Social services? Utilities? Police protection?)

(2) Is a change in housing conditions expected? (Availability? Price? Quality?)

(3) What local population changes can be expected? (Amount and rate of change? Characteristics of expected in-migrants?) Are population changes expected to cause significant value or lifestyle conflicts? Displacement from traditional occupations?

(4) Do local growth management capabilities (land use plans, ordinances, revenue-generating mechanisms) exist?

This chapter should be organized so that impacts are viewed first from the macro scale and then at successively lower levels. Sections include:

(a) 11.1 Introduction (1-3 pages)

(b) 11.2 State-Wide Impacts (3-5 pages)

(c) 11.3 Regional Impacts (5-8 pages)

(d) 11.4 Local Impacts (6-10 pages)

(iii) Schedule and Budget

	Mahours	Completion Date
(a) Draft Chapter	40	December 19
(b) Edit/rewrite	15	December 31
(c) Review	8	January 9

5.12 - Chapter 12 - Analysis of Economic Feasibility and Net Economic Benefits

(i) Objective

To determine the net economic benefits of proposed Susitna hydro power developments to the State of Alaska and to analyze the key determinants of net benefits, including energy cost escalation, discount rates, project economic life and capital costs.

(ii) Approach

Two evaluation methodologies will be described: one based on generation expansion planning models and the other based on project-specific comparisions of life-cycle costs associated with providing a given quantity of power and energy. Both approaches use economic parameters including shadow (opportunity) values of energy where appropriate, and exclude intra-state transfer payments (taxes and subsidies). As the system-wide economic evaluations must follow the cost of power analyses, these results may not be available until after the first Project Overview. The nature of indirect costs and benefits will be identified, and the direction and possibly, the approximate magnitude of effects indicated. Detailed analysis of such secondary project costs and benefits will be in-process work at the time the first Project Overview is in preparation and hence, full results will be provided in subsequent Overview reports. As these evaluation tasks and results depend on the selected set of economic parameters, it is anticipated that the analyses will be rerun as revised values of input parameters emerge.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft Chapter	60	January 6
(b) Edit/rewrite	15	January 18
(c) Review	8	January 24

5.13 - Chapter 13 - Power and Energy Marketing

(i) Objective

To provide an overview of alternative arrangements under which Susitna output can be sold to consumers in the Railbelt Region; to develop a basis for marketing power and energy which provides the necessary degree of revenue assurance; to recommend in outline possible forms of power contract.

(ii) Approach

Three sections will be provided as follows:

(a) Introduction (3 pages)

This will review the past arrangements adopted for marketing electrical power supplies in the Railbelt Region, explaining the relationship between the various supply entities and both wholesale and retail consumers. The relationship between power and energy sales revenue and financing of past development will be reviewed. The Susitna Hydroelectric Project requires special consideration of supply contracts in relation to long-term debt financing. The implications of such requirement will be examined. Any major differences applying to alternative means of supplying Railbelt power and energy needs will be examined.

(b) Supply Contract Arrangements (5 pages)

Various modes of electrical power and energy sale appropriate to the Susitna Project will be examined. Consideration will be given to the likely economic trends through the life of the project, and implications of general inflation and escalation in operating costs will be examined.

Current legislation and rules require certain tests be met if tax exempt bond financing is to be allowed. Among these is an all important test regarding sales of project output to non-tax exempt purchasers. The prospects for such arrangement will be reviewed but it is acknowledged that the broader issue of tax exempt financing will be addressed elsewhere.

(c) Cost of Service (3 pages)

This section will examine the cost of service implications for the Railbelt area under the various modes of marketing output which might apply. In this regard the potentially higher cost of service with the capital intensive hydroelectric alternative will be recognized and ways and means examined of mitigating the effect of this on consumers. The review should lead to the identification of options which would provide an acceptable basis for marketing the output of the Susitna Project.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Prepare draft	40	December 13
(b) Edit/rewrite	15	December 23
(c) Review Chapter draft	8	January 4

5.14 - Chapter 14 - Public Opinion and Perception of Project

(i) Objective

To review the Public Participation Program; to summarize public sentiment toward the proposed project; and to report the general level of public awareness of the implications of various means of meeting future electrical demands.

(ii) Approach

This chapter includes a minimum of three sections. Photographs are encouraged, particularly when they demonstrate public interest (views at public meetings, public participation staff at work, etc.). Specific requirements include:

(a) 14.1 Public Participation Program (6-8 Pages)

Discuss the nature and objectives of the program itself. Review public participation events which have occurred to date (what meetings have been held, attendance, how much correspondence, what questionnaires were distributed, what literature was produced, etc.). Discuss plans for continuation of the program throughout the remainder of Phases I and II -- and beyond if plans have been formulated.

(b) 14.2 Public Concerns (6-10 pages)

Categorize and summarize the general nature of public concerns expressed to date. Tabular information will be helpful here. State what specific changes have occurred, since the study began, to account for key concerns (e.g., commissioning a separate Alternative Study, revisions based on Tussing Report, introduction of a second decision point, etc.). Show how the next public meeting series will be oriented toward addressing principal concerns.

(c) 14.3 Public Awareness of Implications of Various Means of Meeting Power/Energy Demand (5-8 pages).

Assess the extent to which the public is aware of the major implications of a Susitna development and of meeting forecasted demands in other ways. Provide details as to how this awareness will be improved as concurrent efforts by Acres and Batelle proceed.

(iii) Discussion

The descriptions offered above represent the minimum necessary information to provide a comprehensive, but concise, Project Overview.

If, in the view of APA, this section should be expanded, this chapter can be lengthened without impacting other chapters in the document.

(iv) Schedule and Budget

	Mahours	Completion Date
(a) Draft Chapter	*	December 12
(b) Edit Rewrite	40	January 2
(c) Chapter Review	*	January 10

*To be provided by APA staff.

5.15 - Chapter 15 - Licensing and Permitting Procedures

(i) Objective

To review license and permitting and to address steps taken to minimize regulatory conflicts.

(ii) Approach

This chapter will be divided into five sections. Most of it should be derivative of the design transmittal earlier prepared for Subtask 10.02.

(a) 15.1 Introduction (2-4 pages)

Provide a brief introduction to let the reader know what this chapter is about and to describe the labyrinthian course which must be followed if all requirements for licensing and permitting are to be met.

(b) 15.2 Requirements Summaries

A number of questions were furnished to APA by the Office of the Governor. Specific answers (even very preliminary ones) should appear in the text of this chapter for these questions.

Permits and Licenses

(1) What permits, licenses and/or governmental (state, local and/or federal) approvals are necessary?

(2) What mitigation measures or conditions and stipulations can be identified to minimize the conflicts or problems identified above?

(3) What interest and/or responsibility does local government have in this project?

(4) Are there external constraints (e.g., national or international) which figure prominently in the success or failure of the project? (Partially answered here and part in other chapters. For example, impact of fuel use act appears in Chapter 7).

To ensure that each question is addressed, this chapter will review the requirements by governmental category in Sections 15.2 through 15.4. Steps taken or planned to satisfy all of the identified requirements will be addressed in Section 15.5 (see paragraph 5.15(ii)(c) below).

The requirements review should be as concise and readable as possible. Detailed procedural matters should not be described. Rather, we should think in terms of letting the decision maker know that a very complex process is involved and numerous agencies have a piece of the action, but that the situation is well in hand.

A simplified flow chart would be helpful here and could provide an excellent overview of the process for the reader. The task of simplifying requires some innovation! The text may then refer to various blocks on the flow diagram as the reader is walked through the process. We should prepare the diagram in such a way that the FERC process is the primary stream and other Federal, State, and Local requirements are possibly parallel streams with inputs to or outputs from the FERC stream.

Licensing and Permitting Requirements will be summarized by governmental category in the following sections:

15.2 Federal Energy Regulatory Commission (4-5 pages)

15.3 Federal Requirements (Excluding FERC) 3-6 pages)

15.4 State and Local Requirements

- 15.4.1 The Alaska Public Utilities Commission (1-2 pages)
- 15.4.2 State Environmental Agencies (3-5 pages)
- 15.4.3 Local Requirements (1-2 pages)

(c) 15.5 Minimization of Regulatory Conflicts

Describe steps taken or planned to minimize problems. Discuss our ongoing coordination activities with FERC, FWS, ADF&G, etc. Describe the State's Master Permit Application and how it applies here. Briefly review certain points made in the POS (e.g., being prepared to work under new FERC regulations if received) and changes we have made to ensure we satisfy requirements (e.g., changing the recreation planning to ensure completion in Phase I).

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft Chapter	60	December 12
(b) Edit/Rewrite	20	January 2
(c) Review	8	January 16

5.16 - Chapter 16 - Financial Feasibility Analysis

(i) Objective

To provide a preliminary assessment of the feasibility of financing, under the auspices of the Alaska Power Authority, of the Susitna Hydroelectric Project.

(ii) Approach

This chapter will contain six sections with subsections as required (estimated at nine) to set out the services of the financial analysis procedure. This chapter will require close coordination with APA's finance advisors (and possibly bond counsel). It may not be possible, by Spring 1980, to be too specific regarding actual numerical analysis and the treatment will concentrate on a presentation of methodology and format of financial statements that ultimately will be used in the analysis.

(a) 16.2 Alternative Financing Strategies

It is anticipated that there may have to be some constraint applied in outlining all alternative strategies for debate as it will be in the interest of APA to examine initially those which are more favorable to the Authority of the State. Introductions of

strategies which are less favorable would follow only if circumstances so demand. In the process of preparing this section, careful consideration would be given in conjunction with APA and their financial advisors, to the ranking of preferred approaches and to their relative "worth" and significance.

(b) 16.3 Basic Structure of Financial Feasibility Analysis

The approach which is to be adopted for this analysis will be set out in some detail and the same structure defined in terms of a logic diagram. The output of the analysis will be period by period pro forma financial statement together with back-up details such as tax calculations and DCF returns on total project investment. At the stage of project development reached in Spring 1980 analysis will be on the basis of full debt financing. A series of significant indicators will be devleoped such as average unit costs, financial rates and total debt service payments. The output will be arranged is such a manner to present a reliable basis for ranking of financing alternatives.

(c) 16.4 Special Features of Financial Analysis

(1) 16.4.1 Choice of Calculation Method

At this time particular attention is being applied to the use of financial planning model "FEZIBL" which is a program evolved from that used originally in the late 1960's for the Churchill Falls Power Project. This program has, since then,

been developed through several other varied applications to resource development application to provide a ready tool for complex evaluations requiring a wide variation of report outputs.

(2) 16.4.2 Quarterly and Annual Calculation

The model offers the convenience of a switch from one interval to another in the course of the "run." Thus initial years can be reported quarterly and long-term results on an annual basis. At the level of project description in Spring 1981, it is likely that annual period reporting only will apply.

(3) 16.4.3 Taxation Considerations

It is recognized that taxation implications have a significant bearing on the viability of a hydroelectric power project such as Susitna. Analysis of this aspect will have to proceed in close conjunction with review by financial advisors or bond counsel. It is anticipated that issues will not have been resolved by Spring 1980, and comment and comparative effects of taxation variables will be presented only in general terms. The objective will be to present clearly the case for tax exempt bond financing.

(4) 16.4.4 Escalation/Inflation Treatment

A close conformity is vital between escalation/inflation treatment in economic and financial feasibility analysis. This will receive special consideration in the current study of a project which it now appears will have to be viewed in the context of a continuing high inflation economy.

16.4.6

16.4.7

16.4.8

16.4.9

Sections 16.4.6 through 16.4.9 will all receive balanced treatment as elements of the financial feasibility analysis. Each section will include appropriate brief text dealing with the approach to be used for the format of presentation and will present the latest and/or most significant printouts produced by the time of the interim overview report (and the subsequent updates).

(d) 16.5 - <u>Sensitivity Analysis</u>

As indicated in the POS, various levels of risk analysis will be carried out on Susitna including (under 11.05) a Summary Risk

Analysis. An initial effort will have been undertaken by Spring 1980, to assess risks applying to various possible generation scenarios including Susitna.

In addition, the financial feasibility analysis will be subjected to sensitivity tests on all significant parameters and inputs. Contingency planning and policy options will be suggested in a provisional, preliminary form in Spring 1980.

(e) 16.6 Conclusions

It will be appreciated that conclusions reached in Spring 1981 will be preliminary but the intent will be to present these interim views in a manner which can have a meaningful contribution to the decision process on whether or not to continue with study of the Susitna Project.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Prepare draft	60	December 19
(b) Edit/rewrite	20	January 6
(c) Review Chapter draft	8	January 18

5.17 - Chapter 17 - Security of Project Capital Structure

(i) Objective

To present an overall assessment of the exposures likely to be experienced by the Susitna Hydroelectric Project, affecting in particular the capital structure under which the project would be financed. The presentation is to address all the various contingency allowances, plans and policy options which could serve to mitigate risks in the undertaking and financing of the project.

(ii) Approach

This chapter is planned to draw together the various assessments of risk and exposures and demonstrate that by adoption of proper measures, including contingency provision, completion guarantees, revenue assurance procedures, form of power contract and other contractual protection, the Susitna Hydroelectric Project might be undertaken as a prudent venture for Alaska Power Authority.

It is planned to have five sections within this chapter involving fifteen pages of text.

(a) 17.1 Overall Risk Analysis and Contingency Provision

This section will draw on other chapters to summarize the findings of the various risk analysis and feasibility analysis studies and to make an assessment of the order of magnitude of prudent

contingencies in respect of capital cost, schedule, operating costs, variances in predicated escalation trends and other elements that have to be covered by adequate financing.

The overview will address various ways and means that might be employed to minimize overall risk and provide security of project capital structure.

(b) 17.2 Completion Guarantee

The basis of financing of the Project will determine whether or not a specific completion guarantee will be required. It is unlikely therefore that, by Spring 1980, the precise requirements will be clear. However, a discussion will be provided on alternative methods of dealing with this issue and on the significance to the Project.

(c) 17.3 Revenue Assurance Requirements

It is recognized that the main source of assurance in regard to revenue will come from the basic contract under which power and energy output from Susitna are sold. These sections of the chapter will deal with the relevant provisions of the power contract, the prospect for take - or pay (or take and Pay) obligations, minimum payment obligation, guarantees and other sources of payment.

5.18 - Chapter 18 - Organization and Management

(i) Objective

To review the organization and management structure for the Feasibility Study and to summarize organizational aspects which would apply if the project went to construction.

(ii) Approach

This chapter contains 10 sections. In this first edition of the Project Overview, discussions are primarily centered on the Study Organization. The final version in Phase I may place more emphasis on changes which would apply in succeeding phases.

(a) 18.1 Role of Alaska Power Authority in Development of Susitna Hydroelectric Power Project (1-2 pages)

Keep in mind that Chapter 3 discussed APA in some detail. This section should simply establish APA as the agency to whom we report. It should also discuss how other State Agencies fit into the organizational structure. A simplified "wiring diagram" should be prepared so that this and subsequent sections can make reference to it. Mention should be made of ways in which APA exercises its

management role (e.g., attendance at various meetings, review of monthly reports, use of project engineer, day to day coordination in Alaska through the Project Office).

(b) 18.2 Project Management (3-5 pages)

Refer to the organization chart. Discuss in particular the roles of various project team members down to Task level, the management of subcontractors, the project review panel, the internal review board, and the working group.

(c) 18.3 Management of Engineering and Construction (1 page)

State that if the project eventually goes to construction, it will go through a number of phases. In each such phase, the organization may be expected to change to accommodate management needs at the time. Note that future editions of the Project Overview would describe this evolution as it takes place.

(d) 18.4 Policies and Procedures: Management Information Systems

Discuss the fact that Procedures Manuals have been prepared and that certain major sections are contained therein. Note that subs in turn have prepared similar manuals as appropriate. Briefly review various project reports (monthly progress, cost control system, invoices, design transmittals, subtask completion reports, POS revisions, etc.).

(e) 18.5 External Boards of Review (1-2 pages)

Discuss the purpose and current composition. Point out that the first meeting has been held and provide tentative schedule for others. Note the existence of two boards--an Acres external board and an APA external board.

(f) 18.6 Quality Assurance (1-2 pages)

Briefly review quality assurance procedures as they are applied to the project. Give particular attention to how matters are handled for various subcontractors.

(g) 18.7 Public Participation and Information Program (1-2 pages)

Refer to Chapter 13 for full details on the program itself. Use this section to describe briefly how the study team interfaces with the public participation program. Note our involvement in public meetings, workshops, and action list program.

(h) 18.8 Labor Relations (1-2 pages)

Discuss in particular the Native Agreement and the role of the Native Coordinator in APA. Note emphasis on Alaskan involvement. Point out that if the project actually goes to construction, this subject area becomes extremely important and the project staff must include capability in labor relations.

(i) 18.9 Security (1-2 pages)

Discuss the inventory system and procedures for accounting for APA property. Note that insofar as project information is concerned, all materials, files, etc. are available for APA inspection and, aside from certain information which is proprietary to the various firms working on the project, all findings are made available for public review. Point out special procedures for security instituted at the camp (firearms control, fire protection). Observe that if construction occurs, detailed security and safety plans must be prepared and implemented.

(j) 18.10 Organization for Operating Phase (1 page)

Point out that no plans have yet been made for organization for project operation. Even so, such plans should be drawn up initially in the detailed engineering phase to ensure that facilities and operating system components, controls and interfaces are compatible with planned organizational concepts.

(iii) Schedule and Budget

	Manhours	Completion Date
(a) Draft Chapter	40	January 2
(b) Edit/Rewrite	-	-
(c) Review	8	January 16

5.19 - Chapter 19 - Implications of Proceeding with Study of Susitna Hydroelectric Power Development

(i) Objective

To set forth all of the major issues (or gaps) which have been identified to date; to address the advantages and disadvantages associated with a decision to proceed with the study.

(ii) Approach (15-20 pages)

This chapter has purposely not been divided into sections, for much of its content will evolve as other chapters are prepared. Even so, it is anticipated that some attention will be given to discussion of the various "gaps" and "bridges" developed during the July 14, 1980, meeting with Dr. Merrett, Economics Consultant (copy of minutes is included as TAB 5.19-1).

For each issue (or "gap") identified in this chapter, a response will be prepared to indicate how it is being resolved or what must be accomplished to ensure resolution. Internal reports prepared as inputs to Subtask 11.02 may be used to support these discussions and certain selected internal reports may appear in the Appendices to the Project Overview (see paragraph 5.20). To the extent that preliminary conclusions can be drawn regarding any of the issues, they will be expressed in this chapter.

Insofar as implication of proceeding are concerned, it must be stressed that no decision to construct a project can or should be made until much later, and certainly not until after the feasibility study is completed. Thus, the implications of proceeding with the study must deal with such matters as the "savings" associated with terminating the work, the loss of the investment to date if the study stops, the opportunity to acquire useful data which will be of value to the State regardless of whether the project is ever built, the lead time saved by getting a license even without a construction decision, the importance of keeping options open, etc.

(iii) Schedule and Budgets

	Manhours	Completion Date
(a) Initial issues discussion and feedback to appropriate coordinators of other chapters	60	November 21
(b) Draft Chapter	40	January 23
(c) Review	*	*

*To be accomplished as part of the draft report review (after individual chapters have been prepared, edited, and reviewed).

TAB 5.19-1

MINUTES OF TASK 11
MEETING, JULY 14, 1980

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

5.20 - Chapter 20 - Appendices as Required

(i) Objective

To provide a vehicle for more comprehensive coverage of particular subject areas.

(ii) Approach

It is anticipated that appendices to the Project Overview will be gathered and bound as a second limited distribution volume.

Examples of candidates for this volume include internal reports prepared under Subtask 11.02, laws establishing APA, executive summaries of certain technical reports, etc. Chapter coordinators will be expected to nominate materials for inclusion as appendices.

(iii) Schedule

To be established as chapters are completed.

6 - DUTIES OF KEY PERSONNEL

6 - DUTIES OF KEY PERSONNEL

6.1 - Chapter Coordinator

The chapter coordinator will be expected to accomplish the following:

(a) Review this manual within three days of receipt, paying particular attention to the content of chapters assigned to him.

(b) Make recommendations to the Editor (C. Debelius) as soon as possible if it appears that the chapter content should be changed. (This effort is particularly important since each chapter coordinator should have an opportunity to refer to other chapters as appropriate. We should publish addenda to this manual (if required) as early as possible so that we minimize abortive efforts).

(c) Determine what assistance is required and from whom in order to put together the draft chapter on schedule and within assigned manhour budgets.

(d) Break down assigned chapter budget as necessary and provide designated assistants with sufficient manhours to complete their portions of the

chapter. Give each such assistant a scheduled date when his material must be returned to you so that you can meet your schedule for submission of the completed draft chapter. (Note that manhour budgets do not include secretarial time. All secretarial effort is charged to a sub-number in Task 00).

(e) Give early consideration to appropriate illustrations--particularly photographs--so that such material can be assembled and submitted with the draft chapter.

(f) Prepare and submit assigned draft chapter in accordance with the general procedures in Section 3 of this manual and consistent with assigned chapter content as described in Section 5.

(g) Review the edited or rewritten version of your draft chapter in accordance with the assigned schedule to ensure that the contents correctly reflect study findings as they are then known. (Note that subsequent reviews by the Technical Study Director and the Project Manager are also scheduled. Thus, it is important that you accomplish your own review as quickly as possible to ensure that the entire Project Overview is completed and published prior to the Governor's decision point).

(h) Provide a memo to the Editor if at any time subsequent to submitting your draft chapter there has been any change in your subject area of sufficient importance to warrant a change in the text to appear in the final version of the Overview.

6.2 - Reviewers

Reviewers will recommend any changes which in their opinion are necessary to ensure our product is factual, concise, and that it reports results in an unbiased fashion. Remember that the Project Overview must present the APA case to the Governor. The quality of Acres performance must be evident in the professionalism of our approach, but we must not "beat our own drum."

6.3 - Editor

The Editor will coordinate the preparation of the entire project. He will be responsible to the Project Manager for the timeliness and quality of the work. To the extent that it is necessary to ensure uniformity of style and comparable depth of coverage in various areas, he will rewrite initial draft materials as necessary.

6.4 - APA Staff

Assistance is sought from the APA staff in a number of areas:

(a) Preparation of the draft chapter on Public Involvement (Chapter 14).

(b) Providing information as requested by the Chapter 3 Coordinator to support accurate descriptions of the Authority.

(c) Reviews of sensitive material from time to time, and particularly review in a timely fashion of the proposed final draft.

7 - CONSOLIDATED BUDGET AND SCHEDULE

7 - CONSOLIDATED BUDGET AND SCHEDULE

A draft schedule is provided at Figure 7.1. It is important to note that we are faced with an absolute deadline of March, 1981, to get the completed report to the printers. Failure to meet this date can have disastrous consequences since one of our key objectives is to provide comprehensive information to the Office of the Governor before the end-March decision point. Thus, preceding individual chapter deadlines cannot easily be slipped.

A tentative manhour budget and page estimate summary is presented in Table 7.1. Keep in mind that budgeted manhours do not generally provide for original research. To the extent that such research is required, it should be accomplished as a part of other subtasks. The Project Overview should draw upon work already completed or in progress and upon plans already made.

It should be noted that our current expectation is that the number of pages (exclusive of figures and tables) is expected to decrease as the Project Overview evolves. Even so, neither the total chapter page estimates in Table 7.1 nor the individual section page estimates contained in Section 5 of this manual are fixed. If the complete message can be conveyed with fewer pages, chapter coordinators are encouraged to do so. If more are required, use them. Once the individual chapters are assembled in the first draft report, an effort will be made to balance the level of detail from chapter to chapter.

TABLE 7.1

PROJECT OVERVIEW PAGE ESTIMATES AND MANHOUR SUMMARY

	ITEM	PREPARATION OF DRAFT CHAPTERS	EDITING, REWRITE	REVIEW	PAGE ESTIMATES
1.	Introduction	40	--	8	5
2.	Summary	40	--	--	15
3.	APA	40	15	8	10
4.	Susitna Project	60	--	8	20
5.	Econ. Parameters	60	30	8	25
6.	Forecasts	60	30	8	15
7.	Basin Studies	90	30	12	30
8.	Expansion Plan	100	30	12	22
9.	Susitna Development	90	30	12	36
10.	Environmental	80	20	8	40
11.	Socioeconomic	40	15	8	10
12.	Econ. Feasibility	40	15	8	15
13.	Marketing	40	15	8	12
14.	Public Opinion	---	15	--	20
15.	License/Permits	60	20	8	16
16.	Financial Feasibility	60	20	8	12
17.	Security Capital	40	15	8	10
18.	Organ. & Manage	40	--	8	10
19.	Implications	100	--	--	15
20.	Appendices	---	--	--	--
	Subtotals	1,080	300	140	322
	First Draft Report	---	100	24	300
	Final Draft Report	---	80	12	275
	Final Report	---	60	8	250
	TOTAL	1,080	540	184	---

INCLUDES:

Hours Subtask 11.01 Budget	(800)	(280)	(144)
Hours P5700.00 Budget	(280)	(260)	(50)

ACRES

SCHEDULE SHEET (DRAFT) - FIGURE 7.1

SHEET 1 OF 1

CHARGE NO P5700.11.01001

CLIENT ALASKA POWER AUTHORITY

PROJECT SUSITNA HYDROELECTRIC PROJECT
PROJECT OVERVIEW - SUBTASK 11.01

LEGEND
- (D) Drafted
- (E) Edited
- (R) Reviewed
- (I) Issues sent out
- (P) Printed

PREPARED BY CAD DATE November 17, 1980

PROJECT APPROVAL _____

WORK PACKAGE CHAPTER	DESCRIPTION
1	INTRODUCTION
2	PROJECT OVERVIEW SUMMARY
3	ALASKA POWER AUTHORITY
4	HISTORY OF SUSITNA PROJECT
5	ECONOMIC SCENARIOS & PARAMETERS IN ALASKA
6	MARKET AREA & POWER/ENERGY DEMAND FORECAST
7	SUSITNA BASIN STUDIES
8	GENERATION EXPANSION PLAN
9	SUSITNA HYDROELECTRIC DEVELOPMENT
10	ENVIRONMENTAL CONSIDERATIONS
11	ANALYSIS OF SOCIOECONOMIC IMPACTS
12	ANALYSIS OF ECONOMIC FEASIBILITY AND NET ECONOMIC BENEFITS
13	POWER AND ENERGY MARKETING OPTION
14	PUBLIC OPINION AND PERCEPTION OF PROJECT
15	LICENSING AND PERMITTING PROCEDURES
16	FINANCIAL FEASIBILITY ANALYSIS
17	SECURITY OF PROJECT CAPITAL STRUCTURE
18	ORGANIZATION AND MANAGEMENT
19	IMPLICATION OF PROCEEDING WITH STUDY OF SUSITNA HYDROELECTRIC POWER DEVELOPMENT
20	APPENDICES AS REQUIRED
	FIRST DRAFT REPORT
	FINAL DRAFT REPORT
	FINAL REPORT
	PRINTING
	DISTRIBUTION