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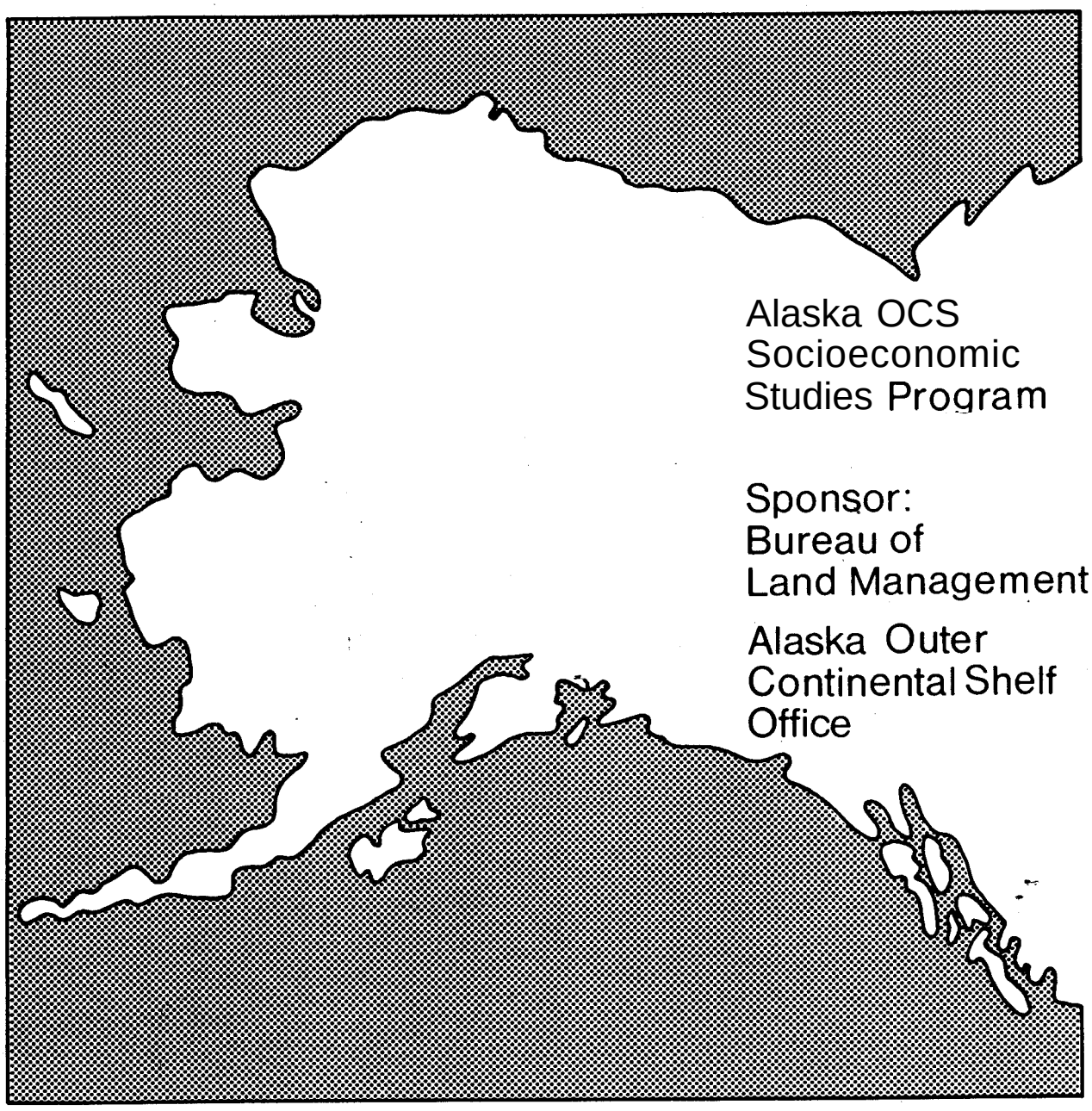
Technical Report
Number 25



Alaska OCS
Socioeconomic
Studies Program

Sponsor:
Bureau of
Land Management

Alaska Outer
Continental Shelf
Office

Second Program Summary Report

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The United States Department of the Interior was designated by the Outer Continental Shelf (OCS) Lands Act of 1953 to carry out the majority of the Act's provisions for administering the mineral leasing and development of offshore areas of the United States under federal jurisdiction. Within the Department, the Bureau of Land Management (BLM) has the responsibility to meet requirements of the National Environmental Policy Act of 1969 (NEPA) as well as other legislation and regulations dealing with the effects of offshore development. In Alaska, unique cultural differences and climatic conditions create a need for developing additional socioeconomic and environmental information to improve OCS decision making at all governmental levels. In fulfillment of its federal responsibilities and with an awareness of these additional information needs, the BLM has initiated several investigative programs, one of which is the Alaska OCS Socioeconomic Studies Program (SESP).

The Alaska OCS Socioeconomic Studies Program is a multi-year research effort which attempts to predict and evaluate the effects of Alaska OCS Petroleum Development upon the physical, social, and economic environments within the state. The overall methodology is divided into three broad research components. The first component identifies an alternative set of assumptions regarding the location, the nature, and the timing of future petroleum events and related activities. In this component, the program takes into account the particular needs of the petroleum industry and projects the human, technological, economic, and environmental offshore and onshore development requirements of the regional petroleum industry.

The second component focuses on data gathering that identifies those quantifiable and qualifiable facts by which OCS-induced changes can be assessed. The critical community and regional components are identified and evaluated. Current endogenous and exogenous sources of change and functional organization among different sectors of community and regional life are analyzed. Susceptible community relationships, values, activities, and processes also are included.

The third research component focuses on an evaluation of the changes that could occur due to the potential oil and gas development. Impact evaluation concentrates on an analysis of the impacts at the statewide, regional, and local level.

In general, program products are sequentially arranged in accordance with BLM's proposed OCS lease sale schedule, so that information is timely to decisionmaking. Reports are available through the National Technical Information Service, and the BLM has a limited number of copies available through the Alaska OCS Office. Inquiries for information should be directed to: Program Coordinator (COAR), Socioeconomic Studies Program, Alaska OCS Office, P. O. Box 1159, Anchorage, Alaska 99510.

TECHNICAL REPORT NO.: 25 **Contract No.:** AA550-CT6-61

Alaska OCS Socioeconomic Studies Program

SECOND PROGRAM SUMMARY REPORT

Prepared For

Bureau of Land Management

Alaska Outer Continental Shelf Office

Prepared By

Peat, Marwick, Mitchell & Co.

November 1979

NOTICE

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Alaska OCS Socioeconomic Studies Program
Second Program Summary Report

Prepared by
Peat, Marwick, Mitchell & Co.

November 1979

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I. INTRODUCTION

The Alaska Outer Continental Shelf (OCS) Socioeconomic Studies Program, commonly referred to as the "SESP", is a multi-year, multi-disciplinary research program assessing the social, economic, and related physical effects of future petroleum development in the federal portion of the Alaskan continental shelf. The SESP is sponsored by the Alaska OCS Office of the Bureau of Land Management (BLM) and is currently managed under contract by Peat, Marwick, Mitchell & Co. (PMM&Co.) who, in turn, employ a broad range of subcontractors to conduct the various technical analyses. The purpose of the SESP is to provide human environment information to federal OCS decision-makers, with particular emphasis on developing information related to preleasing decisions made by BLM and the Department of Interior (lIOI). Products of the SESP are principally used as input to environmental impact statements (EIS) and secretarial issue documents (SID) prepared for specific OCS lease sales. The information is also useful in BLM's development of lease-sale stipulations and long-range assessment of the socioeconomic effects of federal lease-sale policy. Because of the geographical extent and technical content of SESP studies, developed information may also be useful to local communities and municipalities, as well as regional and state agencies.

The purpose of this executive level document is to summarize managerial, methodological and technical progress in -the SESP, as the program completes approximately thirty-six (36) months of activities. Particular

emphasis of this summary is on those activities of the past twenty-four (24) months, which reflect a dynamic period in the identification of BLM's decision-making information needs and in technical development of the SESP itself.

This summary report is intended to serve individuals, agencies or organizations that fall into two broad groups: those interested in SESP products and those interested in the program itself. For those interested in SESP products, this report intends to provide an overview of the program technical methodology and its continued development during the past twenty-four (24) months; to explain the organization, relationship, and limitations of various technical components of the program; and to briefly summarize the significant technical content of completed and ongoing studies. For those interested in the program itself, this report additionally intends to provide a brief description of the continuing evolution of the SESP; to record the significant managerial and technical lessons learned as well as subsequent changes made to the program since last reported; and to identify the future opportunities for individuals and organizations to become involved in the program.

The information provided in this document updates similar information found in two SESP management reports prepared during the first twelve (12) months of the program. The first of these, entitled "First Annual Program Development Plan" (PMM&Co., 1977), was intended to serve as an initial guide to development of the overall program and as an early management tool. The second report, entitled "First Annual Report: Synthesis of Findings" (PMM&Co., 1978), attempted to synthesize the first year's findings and to show how

these contributed to the design of studies in the second year. These earlier reports were intended to be the first of an annual series focusing on program management issues, each annual report helping to structure subsequent years of the Program. However, due to changes in BLM's information needs, the then current schedule of work in process, and for several other reasons, the series was not continued on an annual basis. As a result, this summary report is making a periodic rather than annual appearance.

This report is organized into five chapters. Chapter Two, entitled "OCS Information Needs" discusses the federal and Alaska information needs which influence and shape the scope as well as the pace of the SESP.

Chapter Three, entitled "Description of the Program", provides a brief historic background of events leading to establishment of the SESP, but will principally focus on the organization for conducting the study and on a summary description of the present technical methodology.

Chapter Four, entitled "Work Completed and Underway", briefly summarizes the purposes and findings of work begun during the first three years of the program. Completed works include studies in the Beaufort Sea, Northern and Western Gulf of Alaska, and Lower Cook Inlet, together with several program-wide special studies. Studies begun, but not completed, are those currently being conducted in the Bering-Norton Sound area.

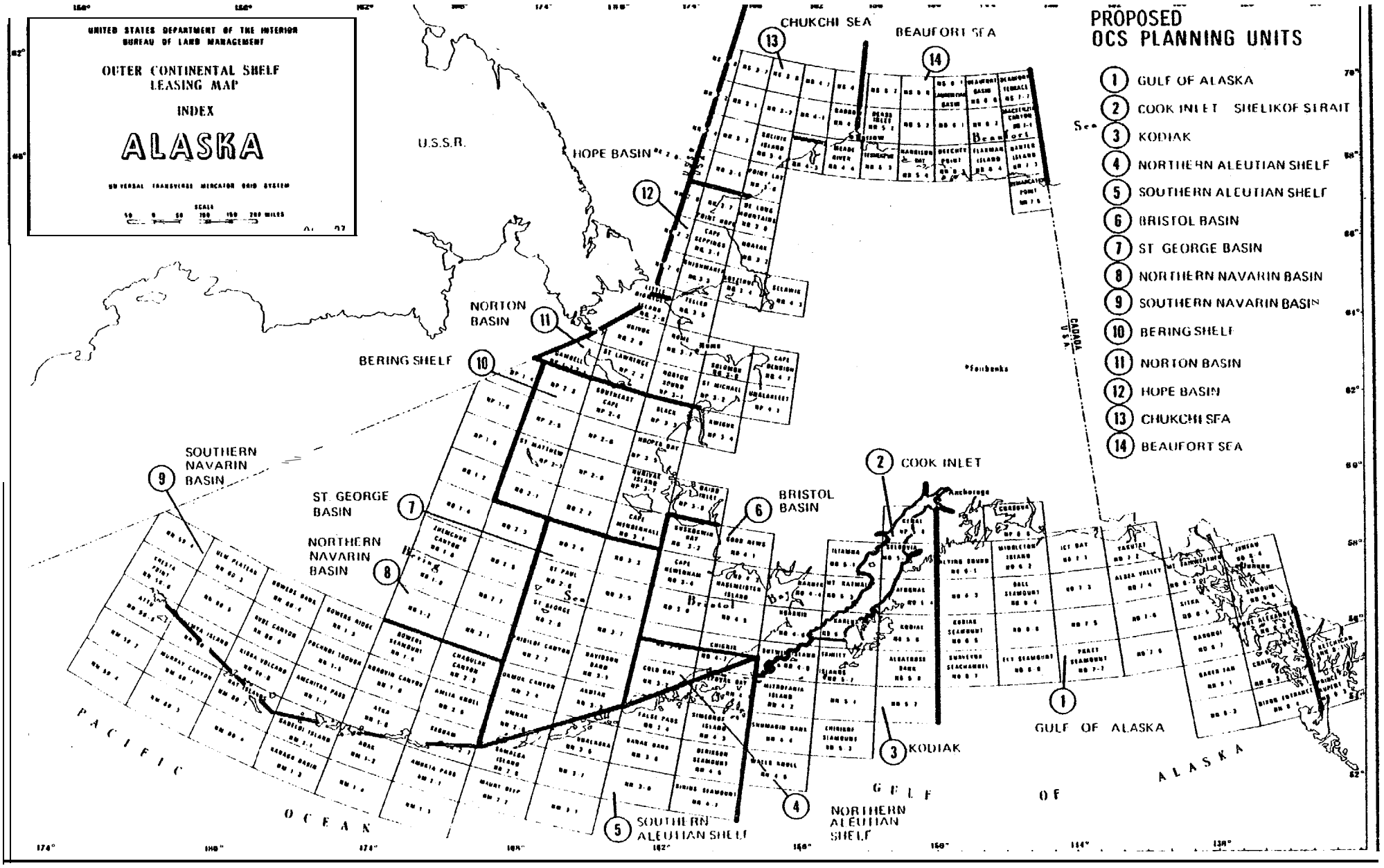
Chapter Five entitled "Future Work", briefly describes planned studies in other western Alaska areas and longer-range activities statewide. This discussion should be of interest to potential program participants.

II. OCS INFORMATION NEEDS

The SESP exists to serve a part of the federal government's OCS decision-making information needs in Alaska. These information needs consequently shape the scope, pace, and direction of the program and its constituent studies. The characteristics of Alaska itself, its various peoples and their communities, also serve to shape the scope of the program and its studies. This chapter seeks to define the federal government's needs and unique Alaska characteristics that provide the form and substance of the SESP.

Federal Needs

Prior to 1974, offshore oil and gas development in Alaska was focused on state lands in Upper Cook Inlet. Exploration and development of these offshore leases had been ongoing since 1959 when the State began leasing oil development rights. However, in responding to the national energy situation created by the Arab Oil Embargo, in 1974 the federal government identified additional offshore areas to be made available for mineral leasing. For the first time, areas in the Alaskan OCS were included in the federal oil and gas leasing program. Initially, nine "lease sale areas" were designated. Subsequently, as shown in Figure 1, it has been proposed the Alaskan OCS be divided into fourteen areas, which if approved will be referred to as "planning units". With the exception of portions of the Gulf of Alaska and Cook Inlet-Shelikof Strait planning units, all are considered "frontier" areas, meaning there have been no previous sales


UNITED STATES DEPARTMENT OF THE INTERIOR
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OUTER CONTINENTAL SHELF
LEASING MAP
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GULF OF ALASKA
NORTHERN ALEUTIAN SHELF
SOUTHERN ALEUTIAN SHELF
PACIFIC OCEAN
GULF OF ALASKA
CANADA
Fairbanks
Anchorage

Figure 1

or exploration activities. Depending on oil development interests at least one sale in each proposed planning unit is likely. If initial exploration finds oil, or if oil development interest remains high, several generations of sales are possible in each planning unit.

To guide petroleum development in these and other areas in the Nation's OCS, the federal government publishes a five-year schedule of proposed sales. The schedule is updated periodically to reflect changing conditions influencing the pace of petroleum development which includes among many factors such things as a major find in a new lease area or dramatic change in the energy situation. Table 1 is a part of the June 1979 edition of this five-year schedule and identifies the current proposed sale schedule for the Alaska OCS. The reader should note in Table 1 that not all Alaskan areas are included and that sales numbers 55 and 60 are second generation sales. The initial sales in the Gulf of Alaska and Lower Cook Inlet areas were held in April 1976 and October 1977, respectively.

The decisions associated with leasing federal OCS lands are based on the gathering and analysis of appropriate information. The specific responsibilities of BLM in the OCS, particularly as these responsibilities relate to the need for a program such as the SESP, are defined in federal legislation and administrative directives dating from 1953. The Submerged Lands Act of 1953 set the seaward limit of coastal states' jurisdiction over the mineral rights in the seabed and subsoil of submerged land adjacent to their coast line out to a distance of three (3) nautical miles. There are two exceptions, Texas and the Gulf Coast of Florida, where jurisdiction extends to three (3) leagues based on colonial charter. In doing so, this

TABLE 1

Proposed Five-Year OCS Lease Sale Schedule -- Alaska Portion
(June 1979 Edition)

Sale Number	Planning Unit Name	Sale Date
-	Beaufort Sea (Joint Federal /State Sale)	December 1979
55	Gulf of Alaska	October 1980
46	Kodiak	December 1980
60	Cook Inlet - Shelikof Strait	September 1981
57	Norton Basin	September 1982
70	St. George Basin	December 1982
71	Beaufort Sea	February 1983
75	Northern Aleutian Shelf	October 983
83	Northern Navarin Basin	December 984
85	Chukchi Sea	February 985

Source: BLM/Alaska OCS Office

Act set the inner geographical limit of federal authority in the OCS. The Outer Continental Shelf Lands Act of 1953 established federal jurisdiction over the submerged lands of the continental shelf seaward of states' boundaries. This Act places responsibility for administering mineral exploration and development on the OCS with the Secretary of the Interior and empowers the Secretary to formulate necessary regulations to meet its provisions. Accordingly, the Secretary designated the BLM as administrative agency for leasing submerged federal lands, and the Geological Survey (USGS) for supervising mineral development and production on those lands. As a consequence of this action, pre-leasing decisions are primarily made by BLM, post-leasing decisions primarily by USGS.

More recent legislation is most significant in defining the physical, social, economic, atmospheric, and biological components, conditions, and factors that must be considered in making OCS decisions. Most notable are the National Environmental Policy Act of 1969 (NEPA) and the Outer Continental Shelf Lands Act Amendment of 1978. Other applicable legislation includes: The Marine Protection, Research, and Sanctuaries Act of 1972; The Coastal Zone Management Act of 1972; The Marine Mammal Protection Act of 1972; The Federal Water Pollution Control Act Amendments of 1972; and the Energy Research and Development Act of 1975.

To insure that the requirements of all legislation are met, the Department of Interior developed an "OCS management process" consisting of fourteen (14) major lease steps. These are identified in Table 2. The primary responsibilities for executing each step are distributed to BLM and USGS in accordance with their major responsibilities, although other DOI agencies

TABLE 2

Major Steps in the OCS Leasing Process

1. Tentative Sales Schedule
2. Call for Nominations
3. Tentative Tract Selection
4. Preparation of Environmental Statement (ES)
5. Draft Secretarial Issue Document (SID) and Preliminary Notice of Sale
6. Final SID
7. Final Tract Selection
8. Notice of Sale
9. Sale Held/Leases Issued
10. Exploration Plan Evaluation and Drilling Permit Approval
11. Transportation Management Plan Approval
12. Development and Production Plan Evaluation and Approval
13. Pipeline Permit Issuance
14. Leases Termination or Expiration

Source: U.S. DOI, BLM. 1978. Study Design for Resource Management Decisions: OCS Oil and Gas Development and the Environment, Page 2-3.

are involved in the process. BLM's primary responsibilities include steps 1 through 9.

To meet its various information needs at the time the Alaskan lease sale areas were first identified, BLM proposed the OCS Environmental Assessment Program (OCSEAP) largely to gather biological and other marine ecosystem data as part of the environmental impact statement (EIS) requirements dictated by NEPA legislation. During February, 1975, at a workshop meeting of representatives of federal agencies, industry, and the State of Alaska, who were meeting to review and comment upon the draft study plan for the environmental assessment of the Gulf of Alaska, Southeastern Bering Sea, and Beaufort Sea, questions were raised about the overall adequacy of that study plan to address social and economic concerns in Alaska. The principal focus of these concerns were the sparsely populated geographically isolated rural areas where development of onshore facilities to service offshore oil and gas activities are likely to have a far reaching impact on established cultural traditions, economy, and lifestyles.

In response to these concerns and to other suggested research programs for study of socioeconomic impacts, BLM contracted with the University of Alaska's Sea Grant Program to develop an integrated comprehensive program to study the socioeconomic effects of Alaska OCS development. A three day workshop was held in September 1975 to develop an initial draft study plan and a public conference was held in November 1975 to review the workshop plan and to develop recommendations for its change

(University of Alaska Sea Grant Program, 1975a). The resultant Alaska Sea Grant Study Plan entitled "Social and Economic Impact Assessment of Alaska Outer Continental Shelf Petroleum Development" (University of Alaska Sea Grant Program, 1975b) became the basis for establishing the SESP.

Alaska Needs

The original concept of the SESP was that of a broadly-based research program wherein impact studies were conducted to meet day-to-day information needs of BLM while research was conducted to broaden and improve analytical tools and procedures. For purposes of consistency in research design, work coordination, and synthesis of results, each geographic unit (the state as a whole, local communities) was considered to be represented by an arrangement of interrelated systems (economic, social, cultural, physical, demographic, etc.). Excluding management activities, there were four key program elements: comparative studies; subsystems analysis and modeling; preparation of oil and gas development scenarios; and impacts identification. However, the original study plan did not specifically identify BLM's information needs regarding social, economic, and related physical activities. Identification of such needs was to be by the nature and results of subsequent studies. This initial shortcoming created considerable confusion at the beginning of the SESP, as contractors wrestled with the initial definition of BLM information needs in the context of Alaska.

This confusion stemmed from the fact that certain elements of human activities in coastal communities likely to be affected by OCS development also shape OCS information needs. These activities are rooted in cultural

traditions and lifestyles influenced by Aleut, Eskimo, Indian or Russian ancestry, by the local physical setting, and by the land and natural resource base. These communities are uniquely different from each other and are particularly different from communities in other parts of the United States. These different characteristics first surfaced in questions raised about the adequacy of the OCSEAP program to address social and economic concerns in Alaska and later became the focus of the BLM-sponsored public conference considering the original SESP study design. To adequately deal with social and economic impacts in such communities, the impacts must be interpreted and evaluated from the perspective of the culture being studied and must be translated in terms understandable to OCS decision makers. As a consequence, the SESP is different from typical socioeconomic impact studies because of its special treatment of these differing aspects of human activities, largely through investigations of traditional and modern socio-cultural systems and of man's linkage to the natural physical environment through subsistence activities.

Subsequently, BLM has taken additional steps to identify its OCS information needs generally and in Alaska. The impetus for these changes grew out of rapid development of the OCSEAP program over the period 1974 through 1976 when involved people began to recognize limitations inherent in that program's initial design. In mid-1976, BLM contracted with the National Academy of Sciences (NAS) to perform a critical review of the OCSEAP program focusing on the adequacy of that program to meet stated objectives and the relevance of information being generated to management

questions being asked. Findings and recommendations of NAS formed the basis for a revised OCSEAP program design and, in turn, affected the SESP.

The principal finding of the NAS study was that governmental sponsored investigations of OCS-related activities must be more relevant to the government's actual information needs. To insure that such an analysis is made, BLM now requires each of its regional OCS offices, including Alaska, to prepare an annual regional studies plan. The "Alaska Regional Studies Plan" published in May 1979, was the first of this annual series and attempts to define information needs at each step of the OCS management process. In addition to refocusing the SESP, the Alaska Regional Studies Plan identified nine multiple-use conflict areas wherein major issues are likely to evolve. The SESP is dealing with all or part of six (6) of these multiple-use conflict areas:

- Subsistence Living
- Commercial Fishing
- Recreation
- Social Infrastructure
- Ecological Relationships
- Air and Water Quality
- Archeological and Historic Resources
- Shipping Conflicts
- Environmental Hazards to Technology

In adopting the regional plan, BLM moved away from the original study plan developed for the SESP and in the process virtually eliminated

research of the type envisioned in the original SESP Study Design. Consequently, while the SESP continues to work toward the same objective of socioeconomic impact assessment, during the past two years its principal focus has been narrowed to the development of OCS information documents principally serving the environmental impact statement, although other internal information needs are served as well.

III. DESCRIPTION OF THE PROGRAM

Careful assessment of the potential impacts likely to result from offshore development of major natural resources is important in any area. It is, however, of critical concern in Alaska where such development may result in significant changes to the natural physical environment and the unique social, economic and cultural. characteristics of Alaska communities and regions. How the SESP is organized to deal with these and other issues is the subject of this chapter. The discussion focuses on the three major program elements: program management, core technical studies, and special technical studies.

Program Management

Program management is a multifaceted activity incorporating administrative and budgetary responsibilities, as well as technical direction. In the SESP, these responsibilities are shared by BLM and PMM&Co. with some management responsibilities delegated to the various subcontractors. The current organization for management is based upon the systems approach to the technical work advocated in the Sea Grant Study Design and is multidisciplinary in nature. Figure 2 illustrates the organizational relationships between the sponsor, prime contractor, and systems subcontractors. An explanation of these systems is presented in discussions of the technical work later in this chapter.

The Alaska OCS office of BLM is the program sponsor and all technical work is coordinated through this office. Generally, BLM is responsible for overall technical and administrative policy direction, assessment of OCS

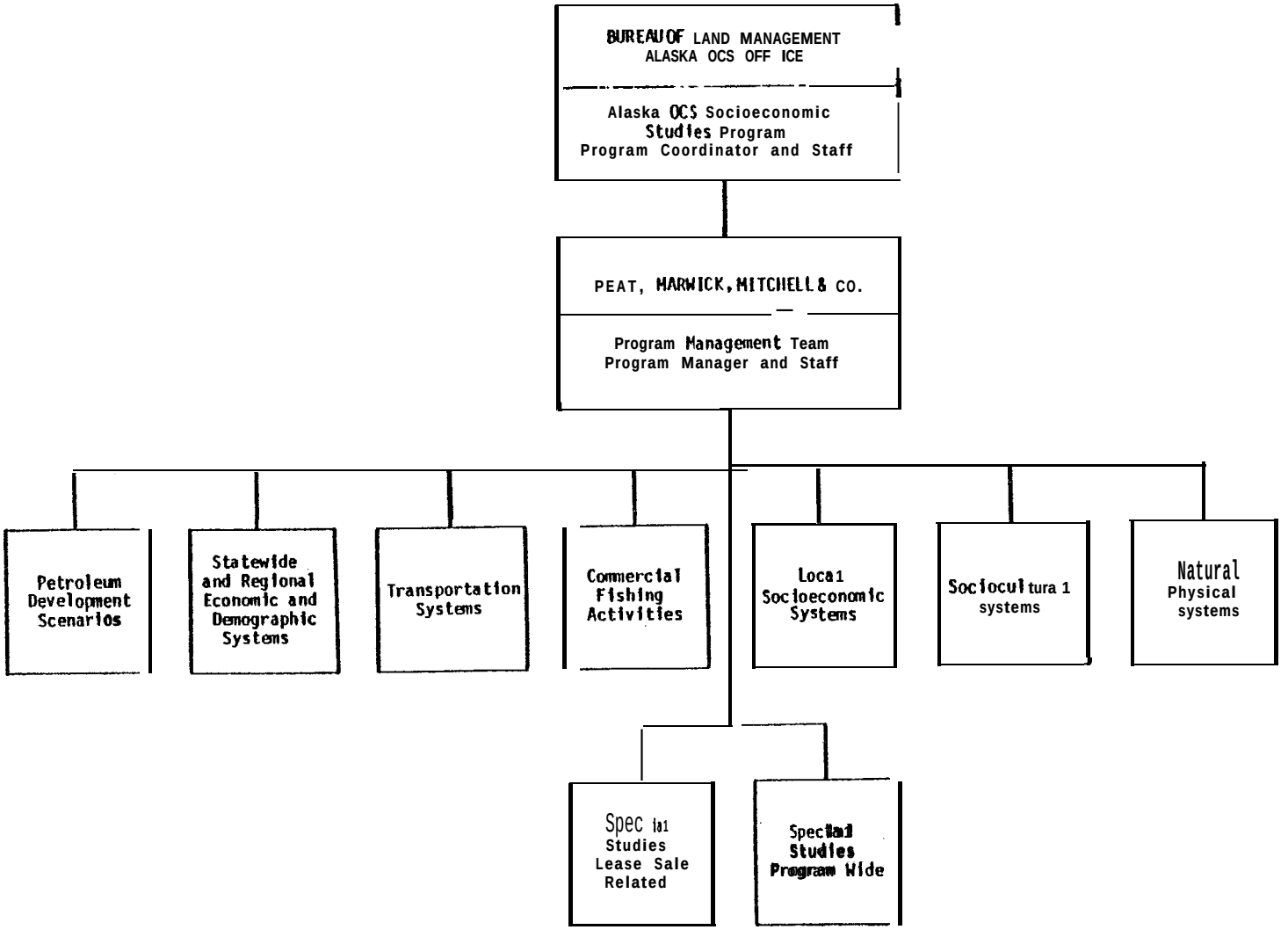


Figure 2

organization Chart
Alaska OCS Socioeconomic Studies Program

Source: PMM&Co.

information needs and priorities, review and acceptance of program products, coordination with state and local government agencies and other federal agencies, and contracting and budgetary control for the federal government. Certain technical, administrative, contracting and budgetary control functions are shared with the Washington D.C. office, mostly through the Contracting Officer and personnel in the Division of Offshore Resources. BLM's principal technical staff and Program Coordinator are located in Anchorage, as are the majority of BLM's environmental assessment group who are the principal SESP product users.

Day-to-day management of the program is PMM&Co.'s primary responsibility and, like BLM, PMM&Co. maintains certain budgetary and contracting functions in Washington D.C. Other PMM&Co. responsibilities are: definition and coordination of all technical activities, including preparation of detailed scopes of work; identification and selection of subcontractors; review of technical products; and contracting and budgetary control for the prime contractor and subcontractors. All technical and administrative aspects of the program are managed and coordinated through a full-time Program Manager and support staff located in Anchorage. Additional management support services are purchased through subcontracts.

All technical work is conducted through subcontracts. The SESP subcontracting approach is based on finding the best qualified subcontractor for each technical system or all associated subsystems in each lease sale area. As a result, over 50 subcontracts have been let during the first 36 months of the program. Subcontractors are obtained through sole source

procurements and requests for proposal (RFP). Where the work is well defined, contracts are fixed price; where the work is ill-clef" ned, contracts are cost-plus-fixed-fee. The majority are fixed price. Virtually all of the subcontractors have been located in Alaska, which represents a conscious effort to reduce coordination problems and to speed up communications. This is particularly important because some subcontractors must rely *on* the output of others as input to their study activities and also aids in understanding and interpreting the "Alaska perspective".

The total value of all work performed by PMM&Co. and its subcontractors is $4,202,300.00 This sum represents the commitment of funds from four funding years beginning in fiscal year (FY) 1976 and should carry current SESP activities through May 1980. The program has had available to it four funding years although the program began only three calendar years ago. This is so because the study began on September 30, 1976, almost the last day of the 1976 federal fiscal year. Table 3 illustrates the distribution of these expenditures program-wide and among the various lease sale areas cross referenced by major program function.

The organization for management of the SESP has, and will continue to be one of the program's most dynamic characteristics. The current organization is different from that in the original study design, has changed once since the program began, and is expected to change again n the near future. When BLM decided to go ahead with the SESP, its exper< ences with other large projects were mixed. There were political as well as monetary

TABLE 3

Program Expenditures Through Phase IV (1)
by Lease Sale Area and Program Function

Program Function	Beaufort Sea	Gulf of Alaska	Kodiak	Lower Cook Inlet	Bering-Norton	Program-Wide Non-Sale Specific	Totals
Management (2)	$ 274,282	$ 34,470	$ 202,348	$ 158,686	$ 231,693	S 298,295	$ 1,299,774
Petroleum Development Scenarios	184,426	135,920	135,920	87,766	132,954	---	676,986
Statewide and Regional Demographic Systems	50,979	26,826	26,826	26,826	90,521		221,978
Transportation Systems	12,500	24,350	24,350	37,650	37,650	---	136,500
Commercial Fishing Activities	---	80,506	80,506	35,511	79,760	---	276,.283
Local Socioeconomic Systems-General	295,501	80,521	80,521	67,121	54 ,2B3	24,069	602,016
Local Socioeconomic Systems-Anchorage	24,652	9,652	9,653	9,652	9,653	---	63,262
Local Sociocultural systems	162,280	47,121	47,530	54,645	53,950	---	365,426
Natural Physical Systems	33,909	---		---	17,888	---	51,797
Special Studies	54,169	---	---	---	---	454,109	508,278
Total Expenditures for each Lease Sale Area	$1,092 ,698	$ 539,366	$ 607,654	$ 477,857	S 708,252	s 776,473	S 4,202,300

NOTES : 1. Each phase corresponds to a fiscal year beginning with FY 1976 (Phase I)
2. Includes only prime contractor expenditures

Source: PMM&Co. 1979

tradeoffs in selecting various approaches to contracting the SESP. " he Sea Grant Study design had recommended BLM be responsible for genera" policy management, but that some (undefined) management functions be contracted, preferably through one organization based in Alaska. The study design also suggested establishment of a study management group and advisory group, presumably to assist BLM directly. The study management group was to be a small four to six person organization oriented to research in the social sciences with its principal duty to develop and monitor the various research plans and proposals and to integrate and disseminate research findings. The advisory group was potentially unlimited in size and was suggested to operate at both the program and local level as feedback mechanism from all groups with an interest in the program's results. BLM chose to contract management of the program through a single organization via the competitive selection process and required the contractor to establish the study management and advisory groups.

The program was initially defined as a five-year study; however, BLM chose to approve each year of the program on an annual basis. This was done largely for funding purposes, but also because no one knew how the program would turn out because it had not yet been fully defined. PMM&Co. and three subcontractors were selected to conduct the first 15 months of the program. The initial approach was that of an interdisciplinary team where in PMM&Co. had day-to-day management responsibilities and each firm contributed key technical personnel to study teams working on identified tasks. Overall policy direction was provided by a study management group

composed of key management people of each firm, while technical direction was provided by a separate technical study group composed of key technical people from each firm. Because of the then current lease sale schedule, which was fast-paced, and the fact that the program started on the last day of the fiscal year, there was great pressure on rapid completion of literature survey, data region definition, and other early tasks. At the same time, the team was to begin to develop a broader definition of the program, to identify applicable methodologies, and to set up the second year of the program.

Although each of the team members had offices in Anchorage, many key technical people of two of the subcontractors were located out of state. The early fast pace, and the distance, took its toll in communications problems and, after nine months, the interdisciplinary team approach was abandoned to be replaced by a multidisciplinary prime-subcontractor approach. In the wake of this event, the responsibilities of BLM and PMM&Co. changed. The study management group was dissolved, its duties absorbed principally by PMM&Co. with certain responsibilities shared by BLM. The advisory group, which never really got started, was replaced by the more informal feedback mechanism of soliciting product reviews and reviews of planned scopes of work. These latter activities have been coordinated by BLM.

This multidisciplinary approach has remained and has been refined and improved over the past 30 or so months. Due to the program's success, BLM has continued to approve annual renewal of the current organization.

However, the NAS study, which imposed changes on the technical content and direction of the study also imposed changes on the manner in which BLM deals with all its studies programs. As a result, BLM is pursuing a course of more direct involvement in the management of its various studies programs. The concomitant result is that BLM will begin to assume full management of the SESP beginning with Phase V in October 1979. May 1980 is the target date for completing full transition. This date allows current subcontractors to complete their work using the present management structure; provides a five to eight month overlap of management advice to BLM; and provides a training period for BLM staff. As of the date of this report, BLM is well underway in planning Phase V work. They are completing a review of Phase V study needs and several additional personnel are being added to BLM's program staff. It is anticipated that the management format and types of technical studies which have characterized the SESP during the past three years will be continued by BLM in future years.

Core Technical Studies

Experience indicates that rapid industrial or resource development, such as that associated with OCS petroleum development, presents human and natural systems with a series of opportunities and risks. Often, the major opportunity appears in one system (such as the economy) and the risk in another (such as the physical environment). However, the decision to engage in resource development is a human question; that is, it is based on the assessment of opportunities and risks as they initially or finally affect the lives and values of people. To meaningfully assess the potential effects of OCS development on the people of Alaska, indicators of

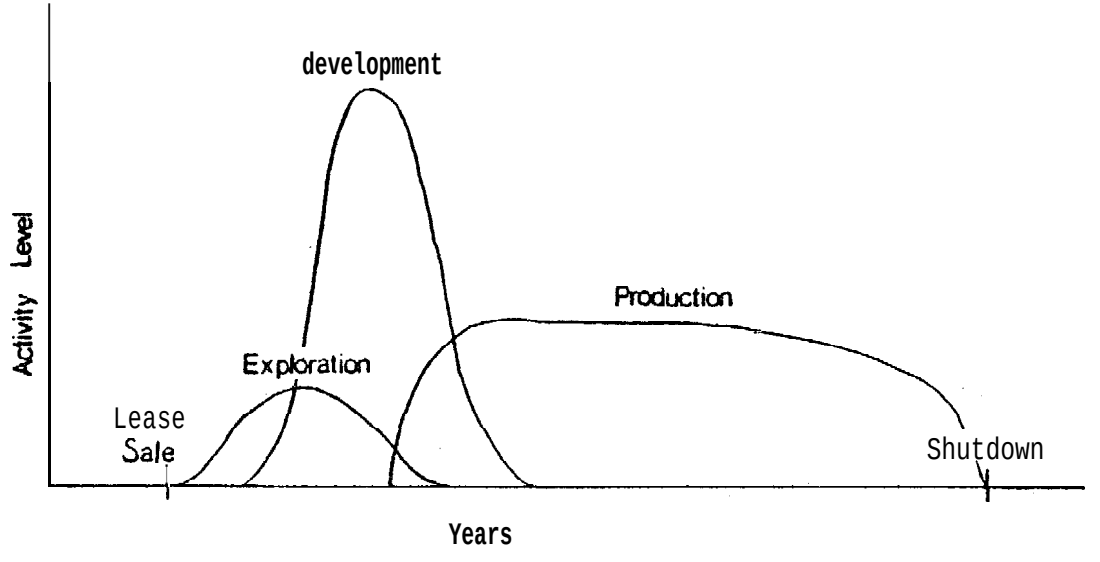
social and economic change must properly link resource development activities to resulting statewide, community and regional changes.

To deal with these linkages, SESP studies are organized into two major groupings: Core Technical Studies and Special Technical Studies. Core studies are labled as such because they are directed at a lease-sale specific analysis of change induced by OCS activities. Core studies are the principal focus of the SESP and include forecasts of petroleum development activities and analysis of: statewide and regional economic and demographic systems, transportation systems, commercial fishing activities, local socioeconomic systems, sociocultural systems, and natural physical systems to the extent they interact with the socioeconomic and sociocultural systems. Special studies include comparative analysis and other special investigations that tend to be program-wide in nature but may be concentrated on a specific lease sale. Special studies are discussed more fully in the next section.

The development of offshore oil and gas resources takes place in four overlapping stages, as illustrated in Figure 3: exploration, development, production, and phase out or shutdown. The type of activities occurring in each stage generally follow the pattern discussed below.

- Exploration. The exploration stage includes pre- and post-lease sale activities to discover and assess the location, quantity and recoverability of oil and gas reserves. These include, among other things, the systematic drilling of tracts within the lease sale area. The major onshore requirement during

FIGURE 3
Phases of Offshore Development



SOURCE : "Anticipating and Planning for the Impacts of OCS Oil and Gas Development" pamphlet presented at "Onshore Impacts of Outer Continental Shelf Oil and Gas Development," an ASPO training project, sponsored by U.S. Department of Interior and Environmental Protection Agency.

exploration is for supply bases in harbors where drilling rigs and service vessels can receive drilling equipment, pipe, chemicals, and provisions. Oil companies and drilling contractors generally seek supply bases near the offshore exploratory drilling tracts. Communities with natural harbors used as supply bases in this stage may become major operations centers during oil development.

. Development. If sufficient recoverable reserves are discovered through exploration, industry may decide to proceed with development of the field. During development, production wells are drilled and offshore storage, dehydration, compression, separation, and transportation facilities are completed. In addition, the development of onshore storage facilities, ports or pipelines continues. This phase of development may require considerable onshore land area, support facilities, material resources and labor.

● Production. The production stage may continue for twenty or more years and involves the continuous production and transportation of oil and gas. Of special concern during this stage are the maintenance of sufficient pressure to bring oil and gas to the surface; the prevention of blowouts, spills and leakages; waste disposal problems; and the monitoring of all production functions. This stage may require long-term storage facilities to support offshore activities as well as support services for workers

and their families.

. Phase-out. When the petroleum resources cease to be economically or technically recoverable, industry-closes down its production operations and plugs and abandons the wells. Many of the support facilities used by the oil companies during the exploration, development, or production phases may also be abandoned. Careful planning may be required to adequately handle the possible decline in economic activity brought about during the phase-out.

The SESP focuses on a longitudinal investigation of the OCS oil and gas development process, beginning from the assembly of predevelopment information to the monitoring of project development as it affects specific communities, regions, or the State as a whole. Impact evaluations are based on a comparative analysis of hypothetical changes likely to occur at the state, region, or local level. As a general rule, the methods employed to forecast and analyze potential changes at the local level varies from those used to evaluate regional and state level changes. This is so because the small local coastal communities are generally expected to receive the direct, physical effects of OCS development, while associated economic or social regions and the State as a whole are generally expected to receive the indirect, non-physical effects of such development. Although this general rule is subject to variations, particularly in Anchorage, it is a useful conceptual device around which to build the general study process and together with other "general rules" (some of which are artificial), is a useful mechanism for defining subcontractor work tasks. Because so many factors enter the federal decision

making process, the SESP does not seek an exhaustive analysis of all possible OCS development effects, but instead attempts to delimit the range of probably significant impacts associated with each sale. The process can be generalized as shown in Figure 4. The evaluation proceeds in six basic steps:

- Step 1, Project OCS Petroleum Development Activities
- Step 2, Describe Baseline. Conditions
- Step 3, Forecast Conditions Likely to Occur if Present Trends Continue and the Proposed Sale Did Not Occur
- Step 4, Forecast Conditions Likely to Occur if the Proposed Sale Did Occur
- Step 5, Analyze State and Regional Level Impacts
- Step 6, Analyze Local Level Impacts

Projection of OCS petroleum development activities (hereinafter referred to as "scenarios") constitutes the oil and gas development hypotheses driving the impact analysis. A scenario is defined as the sequence of petroleum development events in a lease sale area corresponding to a given level of potential recoverable oil and gas resources. Step 1 takes into account the particular needs of the petroleum industry in each development region and projects the human, material, economic, and environmental requirements of the offshore development. Depending on the level of recoverable resources, up to four scenarios are prepared for each lease sale. Each scenario corresponds to a different magnitude of resource find. These provide a range of potential direct employment and equipment characteristics together with the likely location of both in the lease sale area.

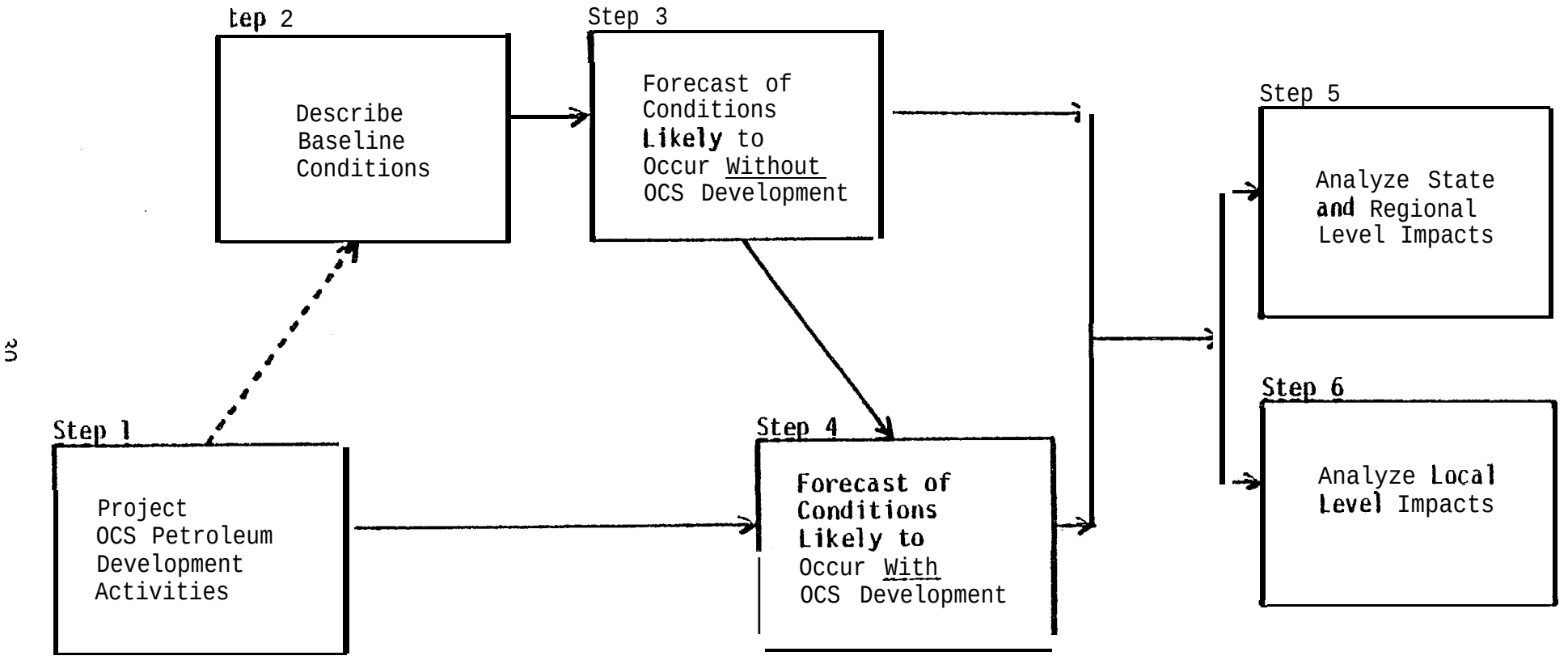


Figure 4

Generalized Impact Evaluation Process

Source: PMM&Co., 1978

The process by which scenarios are prepared is based on a technology model of OCS development activities. The foundation of the technology model is that oil and gas development takes place through private sector investments, which, in turn, are influenced by resource development economics. The analysis attempts to model private sector policy regarding development of the oil and gas resources taking into account existing and planned onshore and adjacent offshore petroleum facilities. Environmental and technological constraints, the distribution and size of potential finds, and other factors that affect the efficiency of recovering the resource are also considered in the analysis.

The U.S. Geological Survey (USGS), through BLM, provides the SESP current estimates of undiscovered recoverable oil and gas reserves for specific offshore areas of Alaska. The USGS estimates attempt to account for 90% of the range of probably undiscovered oil and gas reserves. Three levels of reserve estimates are provided: a low estimate corresponding to a 95% probability that there is at least that amount; a high estimate with a 5% probability that there is at least that amount; and a statistical mean. Because USGS estimates correspond to very large geographic areas, the Studies Program assumes that identified lease sale tracts (provided by BLM) contain the entire estimated amounts. One scenario is constructed for each of the USGS reserve estimates and a fourth is constructed assuming that exploration takes place, but that no commercial quantities of oil and/or gas are found. In order of increasing magnitude of activities, the four scenarios are labeled the Exploration, 95%, Mean, and 5% cases respectively and each is mutually exclusive of the others. Quite often

the general characteristics of the Exploration case are similar to the 95% case. When this occurs the two cases are combined.

Using the USGS oil and gas reserve estimates as control totals and considering the geologic conditions, as well as environmental and technological constraints, the reserves are distributed among the various tracts and assumptions are made about the equipment and technology employed to recover these reserves. Because of associated costs there are many alternative combinations that could be used. These alternatives are reduced to a single most likely alternative using MonteCarlo techniques. Once the most likely equipment and locational characteristics are selected for each scenario, these are converted to employment characteristics for each of the four phases of development and Step 1 is complete.

The purpose of Step 2 is to develop an understanding of baseline conditions and directions of change in potentially affected human activities. The emphasis of the work is on research and analysis of avai able secondary sources of information. The simple duplication of data, information already avai able in published reports is unacceptable unless the information as orig nally presented is vital to understanding the impacts analysis. Tl is data may be supplemented through informal discussions with key informants. However, formal interviews, requiring Office of Management and Budget (OMB) approval of the quest" onnaire, are specifically forbidden. Of particular interest in the baseline studies are the identification and analysis of:

- Those elements or systems of human activity that are affected

by OCS development

- Current trends within these elements or systems.
- Changes or the susceptibility for changes within identified trends.

The scale of human activities varies at the state, regional, and local levels. The types of impacts are different at each level and, consequently, the questions to be answered and the techniques for answering these questions are necessarily different. At the state level, the focus is on describing federal and state government policies and patterns, interstate and intrastate economic relationships and employment migration patterns, plus many other factors that influence broad economic and demographic characteristics. At the regional level, the Studies program continues focusing on broad economic and demographic characteristics, but only in the social and economic regions to be directly affected by the particular lease sale. Population and economic conditions in other regional subdivisions of the state are researched, but are analyzed only from a contextual perspective unless a significant relationship to the directly affected region is discovered.

At the local level, where oil and gas activities are most likely to have a physical presence and, thereby, a more direct effect on human activities, the Program addresses a different set of problems. Onshore oil industry activities are typically attracted to coastal villages and communities that have some or all of the needed infrastructure services. A large influx of new people in these small communities could overburden

available housing and community services and facilities, overwhelm the existing governance capacity, submerge existing voting patterns, and in general cause potential social conflicts. In light of such potential problems, the local level analysis looks at the effects on socioeconomic characteristics of the communities likely to be directly impacted and at the effects on sociocultural characteristics of the people likely to be impacted. Within each identified community, the analysis focuses on changes likely to occur in the following categories: population; the economy, including employment and fiscal characteristics; housing, governance and the political climate; land use and land status; community infrastructure activities including utilities, community facilities, education, public safety, health and social services; and other activities that might be significantly impacted.

The effects on "associated impact areas" are addressed in either the regional or local level analysis. An associated impact area is defined as a non-contiguous area that may receive direct impacts from certain lease sale activities because of the manner in which those activities affect some systems, such as transportation or commercial fishing. Studies of regional transportation systems and commercial fishing industries are conducted since these activities are likely to have a greater areal distribution than OCS development and, because of this fact, are more likely to spread potential impacts over a greater geographic area. Communities affected by such impacts are also studied. Anchorage, Alaska, is studied in each lease sale analysis because of i'ts hub effect on the transportation system and because it is the location of petroleum company

regional administrative offices.

The information developed in Steps 1 and 2, particularly that of Step 2, pertaining to existing trends and their susceptibility to change, allows the forecasting activities in Steps 3 and 4 to proceed. Forecasts seek to develop economic and demographic projections for the year 2000 and for the intervening period at five-year intervals. Because the impact process is based upon measuring the incremental change induced by OCS development over and above "normal" or "expected" change, forecasting activities seek to develop a projection of "expected" change and projections for each OCS scenario of Step 1, when each is added to "expected" change. The forecasting technique varies between the state/regional level and local level.

At the state/regional level, the forecast method must account for the cumulative effect of all prior lease sales, whose collective development activities over the forecasting period form the context for evaluating the incremental effects of the planned sale. To develop such forecasts, the SESP relys on the Man-in-the-Artic Program (MAP) economic model, which has both statewide and regional submodels. The MAP model forecasts a "Base" case and individual OCS cases for each scenario of the planned sale. The Base case consists of two components; one representing an extension of existing conditions and known trends, the second representing cumulative aspects of prior sales. The trend component accounts for other resource development activities (fishing, coal, etc.) and land based oil and gas development (e.g. Prudhoe Bay and National

Petroleum Reserve-Alaska). The cumulative effects component accounts for the effect of prior OCS lease sales and assumes each prior sale takes place in accordance with its respective Mean scenario. When the time sequence behavior of each prior sale Mean scenario is put to the MAP model, the model integrates the individual effects with expected events producing a Base Case representative of all OCS events and non-OCS events likely to occur or be set in motion prior to the lease sale under study. This Base Case is also referred to as the Cumulative Mean Case, since it represents the cumulative effects of all prior sale Mean scenario cases.

In forecasting the effects for each planned lease sale scenario, the time sequence of events of each planned sale scenario are integrated with those of the Base Case by the MAP model. During the impact analysis process, each of these individual forecasts are compared to the Base Case to determine OCS induced changes. Forecasts are prepared for the state as a whole, for the economic region or regions adjacent to the lease sale area, and for the City of Anchorage, which is treated as a region by the MAP model. The Anchorage and other regions' forecasts are used by the local level subcontractors as a control total in their development of local level forecasts.

At the local level, because of the stage of OCS development in Alaska generally, conditions are changing from a base that is for the most part void of any prior OCS influences. A base case and scenario related OCS cases are developed using straightforward forecasting techniques. In

some instances successive sales are geographically proximate and local level forecasts must take into account the events resulting from a prior sale, if the prior sale affected the community under study. The specific forecasting technique used depends in large part on the availability of local data and the ability of the subcontractor to accurately substitute knowledgeable assumptions.

In the impact analysis process (Steps 5 and 6 in Figure 4), changes resulting from oil and gas development are evaluated to determine both beneficial and adverse characteristics. As stated earlier, the analysis is a straightforward comparison of hypothetical future conditions that might occur with OCS development to a hypothetical future condition that might exist if the lease sale does not take place. The logic used to explain impacts begins with the description of baseline conditions and proceeds to describe forecasted conditions without the planned sale. Sequentially, for each scenario the explanation continues by describing OCS activities that might occur between each specified horizon year and the changes that are likely to be brought about as a result of those activities.

The output of these studies are not factual predictions, but are projections predicated on "if this, then probably or possibly that" statements using logical assumptions. The hypothetical nature of the studies effects how impact statements are phrased and to what depth impact analyses are to be taken. For example, stating that OCS development may generate 100 new students is acceptable while stating that the

school must add new classrooms is not acceptable, unless the community itself has already made that determination. While this appears to be a very fine level of distinction, the researcher must keep in mind that the community may approach the situation and solve such a potential problem in an entirely different way. The distinction is significant to intergovernmental relations. The Studies Program is not a planning study seeking alternative or mitigating solutions. Although the documents are being prepared for federal decision makers, the Studies Program will not make recommendations for action, either to the federal government or to the affected community. Many other factors beyond those identified by the Studies Program will eventually enter the decision making process. Program activities are focused solely on analysis. State, regional and local governments, and other agencies or individuals must be provided the opportunity to make their own assessments of alternatives or mitigations and must themselves determine the adequacy of these in dealing with projected impacts.

Special Technical Studies

The core studies described thus far tend to be routinized; that is, they are conducted in the same general manner on a lease-sale specific basis. While the significant topics of investigation vary from one region or community to another, the manner of investigating them follows the logic described above.

In order to conduct socioeconomic impact assessment in Alaska, it was found necessary to begin with lessons learned from other resource development experiences in Alaska and elsewhere, through a series of

special studies, both comparative studies and special investigations. In reviewing past resource development activities in other times and places, widely divergent physical and social outcomes were discovered. In beginning to make projections, it was necessary to draw on these experiences to identify those aspects of change found significant elsewhere. In order to systematize this search for relevant change indicators, a continuing series of comparative studies of resource developments in other places and times was undertake to generate a broad range of possible appropriate indicators.

To the degree that the Program is action oriented, such studies are aimed at identifying impacts of past decisions with particular emphasis on identification of indicators which now appear significant to residents and/or researchers and/or government decision makers. To meaningfully assess potential OCS development effects in Alaska, the indicators must causally link resource development activities (level , type, timing) to resulting community or regional changes. These studies establish the basis for statistical attribution, if feasible, of specific changes in significant indicators to preceding events and provide an explanation for each relationship. In research terms, these comparative studies generate relationships among dependent, independent and intervening variables. Each study attempts to identify and analyze relations involving:

- Preceding condition(s);
- Impact agent(s);
- Intervals, phases, ranges, magnitudes, and forms of development

activity and resulting chains of consequences; and

- Causal links among development activity and chains of consequences.

These studies are complemented by a parallel set of special investigations designed to provide a continuing flow of basic research inputs to other portions of the Program and to BLM. In part, special studies have taken the place of the earlier research program identified in the SESP study design. For example, BLM desired to improve its ability to assess OCS impacts on the visual resources of Alaska. The Program proceeded to conduct a 'special investigation to devise appropriate methods for this assessment. Other special studies have focused on development experienced by Fairbanks, Copper Center, and the North Sea; on the improvement of econometric modeling of oil and gas marketing factors, and so on. Each of these studies are described in the following chapter.

IV. WORK COMPLETED AND UNDERWAY

During the first three years of its operation, the socioeconomic studies program (SESP) has produced numerous investigations in the various lease sale areas. These investigations have followed the schedule order of lease sales identified in Table 1. Several lease sale investigations are currently in progress and are expected to be completed over the next six to eight months. This chapter identifies the salient aspects of these investigations, both those completed and in progress, and identifies the availability of associated final technical reports. The discussion is organized into lease sale-related and non-lease sale-related studies. The former identifies both core and special studies conducted in support of a specific lease sale analysis and is organized by lease sale planning unit. The latter group identifies all other special studies, which are program-wide in scope.

Beaufort Sea Planning Unit

The Beaufort Sea studies were principally focused on potential OCS petroleum development activities stemming from the planned December 1979 Joint State-Federal Lease Sale. The area is located offshore Prudhoe Bay between the Canning River in the east and Colville River in the west. The area extends offshore to the barrier islands and includes Alaska's three-mile limit area surrounding these islands and several tiers of adjacent federal tracts. The analysis also considered a potential subsequent sale in the remaining federal OCS area, extending seaward to about the 20-meter (66-foot) isobath. The investigations in the Beaufort Sea Planning Unit were typical of those discussed earlier under

technical process.

A listing of the core and special studies performed in the Beaufort Sea area are shown in Table 4. Studies in the Beaufort Sea Basin were the first undertaken by the SESP. In this first series of studies, both the baseline conditions and impacts analysis aspects of the investigations were published as final reports, resulting in-what appears to be a large number of final technical reports for the Beaufort Sea Planning Unit when compared to other planning units. In virtually all subsequent investigations in other planning units, the baseline descriptions and impacts analysis were combined in a single final technical report, resulting in a reduced number of final reports for later lease sale studies.

Beaufort Sea Petroleum Development Scenarios for the Federal Outer Continental Shelf: Interim Report (Technical Report #3 - December 1977)

Beaufort Sea Region Petroleum Development Scenarios (Technical Report #6 with Executive Summary Report #6a - April 1978

Preparation of the Beaufort Sea Scenarios was accomplished in two stages. The. initial investigation, published in an interim report, looked at only the federal portion of the OCS and did not consider close-in state lands or the barrier islands. The value of this initial effort was its focus on environmental and technological issues; particularly the influence of critical fish, bird, and sea mammal habitats and moving

TABLE 4

A Listing of Beaufort Sea Planning Unit Reports
Prepared for
Alaska OCS Socioeconomic Studies Program

Title	Author	SESP Technical Report Number(s)	Date	Availability
CORE STUDIES				
Beaufort Sea Basin Petroleum Development Scenarios for the Federal Outer Continental Shelf: Interim Report	Dames and Moore, et.al.	3	December 1977	out of print
Baseline Studies: 8eaufort Sea Region Interim Report	Crittenden, Cassetta, Cannon/ Helmuth, Obata, and Kassabaum, Inc.	5	February 1978	out of print
Beau fort Sea Region Petroleum Development Scenarios**	Dames and Moore	6 and 6a	April 1978	Hardcopy - A22/$15.25, PB 283236/AS*
Beaufort Sea Region Man-Made Environment	Alaska Consultants, Inc.	8	Apri 1 1978	Hardcopy - A13/$11 .00, PB 281634/AS*
Beaufort Sea Region Socio - cultural Systems	Worl Associates	9	June 1978	Hardcopy - A09/$9.00, PB 284566/AS*
Beaufort Sea Region Natural Physical Environment	Dames and Moore	10	June 1978	Hardcopy - A03/$5.40, PB 284567/AS*
Beau fort Sea Region Soci o-economic Baseline**	Peat, Marwick, Mitchell & Co.	11 and 11a	July 1978	Hardcopy - $19.00, PB 294339/AS*
Anchorage Socioeconomic and Physical Baseline**	Dr. Richard L. Ender, et.al.	12 and 12a	June 1978	Hardcopy - A13/$11 .00, PB 284568/AS*
Beaufort Sea Petroleum Development Scenarios, Impacts on Anchorage, Alaska	Dr. Richard L. Ender, et.al.	13	August 1978	Hardcopy - A11/$9.50, PB 291916/AS*
Beaufort Sea Petroleum Development Scenarios, Economic and Demographic Impacts	Institute of Social and Economic Research	18	June 1978	Hardcopy - A13/$11.00, PB 285409(AS*
Beaufort Sea Petroleum Development Scenarios, Man-Made Environment Impacts	Alaska Consultants, Inc.	19	August 1978	Hardcopy - A10/$9.25, PB 294314/AS*
Beaufort Sea Petroleum Development Scenarios, Transportation Impacts	Dennis M. Dool ey and Associates	20	September 1978	Hardcopy - A08/$8.00, PB 291 917/AS*
Beau fort Sea Petroleum Devel op-ment Scenarios, Natural Physical Environment Impacts	Dames and Moore	21	June 1978	Hardcopy - A06/$6.50 PB 224571/AS*

continued

TABLE 4

A Listing of Beaufort Sea Planning Unit Reports
Prepared for
Alaska OCS Socioeconomic Studies Program (continued)

Title	Author	SESP Technical Report Number(s)	Date	Availability
Beaufort Sea Petroleum Development Scenarios, Sociocultural Impacts	Worl Associates	22	August 1978	Hardcopy - A06/$6.50, PB 291918/AS*
Beaufort Sea Petroleum Development Scenarios, Summary of Socioeconomic Impacts	James Lindsay & Associates	23	December 1978	Hardcopy - A06/$6.50, PB 29431 5/AS*
SPECIAL STUDIES				
Prudhoe Bay Case Study	Crittenden, Casseta, Cannon/ Helmuth, Obata, and Kassabaum, Inc.	4	February 1978	Hardcopy - A06/$6.50, PB 281544/AS*
Governance in the Beaufort Sea Petroleum Development Region**	Institute of Social and Economic Research	16 and 16a	August 1978	Hardcopy - A12/$10.75, PB 294316/AS*

* These documents are available from National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161

** An Executive Summary is available from: Coordinator, Socioeconomic Studies Program, BLM Alaska *Outer* Continental Shelf Office, P.O. Box 1159, Anchorage. AK 99510

and landfast ice on the choice of technology, as well as identification of technology options. This information was used and expanded in the second report which specifically addressed the Joint Federal/State Lease Sale scheduled for December 1979. In this final evaluation, use of the Trans-Alaska Pipeline for transportation of potential offshore oil and use of Prudhoe Bay facilities during different stages of development were evaluated. The influence of National Petroleum Reserve-Alaska (NPR-A) on offshore development and facilities use was also considered. The fact that the planned sale was to be a joint effort of both the federal government and the State of Alaska created additional problems in apportioning potential oil and gas reserves among state and federal land owners. This was a significant part of the study because of the potential effect of impacts on state revenues. Five scenarios were selected as being representative of the range of geographic locations and resource levels. Four of these scenarios were used *in* the subsequent impacts analysis.

Beaufort Sea Petroleum Development Scenarios, Economic and Demographic Impacts (Technical Report #18 - June 1978)

The statewide/regional economic and demographic analysis focused on the state as a whole, the North Slope Borough, and Anchorage as an associated impact area. The analysis treated population changes including births, deaths and migration, population age and sex distribution, fertility rates and mortality rates. The economic analysis incorporated

assumptions related to anticipated petroleum development activities offshore, in Prudhoe Bay, and in the National Petroleum Reserve-Alaska together with activities related to the planned natural gas pipeline. The revenue aspect of petroleum development was also considered and included an analysis of fuel production estimates, severance tax rates, value of field equipment and facilities, as well as the effect of distribution of reserve ownership among the state, federal, and Native landowners. These evaluations resulted in estimates of State and Native royalty payments, bonus payments, and severance taxes which are used in an analysis of fiscal activities. As a part of the fiscal analysis, state expenditure policy was reviewed, particularly focusing on the savings rate or spending rules, as well as annual capital expenditures.

Beaufort Sea Petroleum Development Scenarios,
Transportation Impacts
(Technical Report #20 - September 1978)

The transportation study evaluated the effects of large-scale OCS development on current and planned characteristics of the regional transportation system. The use of the North Slope Haul Road and Deadhorse Airport as principal links in the transportation system serving the North Slope were evaluated, together with the influence of OCS development on other regional airports, the Alaska Railroad, and overland highway systems linking the North Slope with Gulf of Alaska ports. The seasonal relationship between truck, air, and barge service into the Beaufort Sea, largely due to Arctic weather conditions, was taken into account. The evaluation also considered the annual barge requirements to the Beaufort Sea, which are constrained by ice conditions, as well as the effects of

moving personnel via scheduled commercial airlines. Because of the use of the Alyeska Pipeline, tanker operations in the Port of Valdez were examined.

Baseline Studies: Beaufort Sea Region, Interim Report
(Technical Report #5 - February 1978)

Beaufort Sea Region Man-Made Environment
(Technical Report #8 - April 1978)

Beaufort Sea Petroleum Development Scenarios,
Man-blade Environment Impacts
(Technical Report #19 - August 1978)

The analysis of local communities and regional government occurred in three phases. An initial investigation published in an interim report looked at land use, land status, utilities, and transportation facilities for the North Slope Borough as a regional entity and for the communities of Barrow and Kaktovik. Some information was also reported for the communities of Point Hope, Point Lay, Wainwright, Anaktuvuk Pass, Cape Lisburne, Atkasuk and Nuiqsut. In the second phase a more detailed study of the Borough and communities of Barrow, Kaktovik, Wainwright, and Nuiqsut was undertaken. This more detailed investigation included examination of population and economic trends, employment (including unemployment and the seasonality of employment), the complete range of public services and facilities (police, fire, education, health and social services, recreation), utilities, and local government organization. This information was published as the final baseline document.

The third phase consisted of an impact evaluation of the Borough and four communities detailed in the baseline report.

Beaufort Sea Region Natural Physical Environment
(Technical Report #10 - May 1978)

Beaufort Sea Petroleum Development Scenarios,
Natural Physical Environment Impacts
(Technical Report #21 - June 1978)

This investigation sought to identify the geographical distribution and sensitivity to OCS development of fish, bird, and sea mammals, fresh water resources, gravel and sand resources, and terrain conditions. The resultant distributions, published in map and narrative form were then compared to the geographical distribution and intensity of expected OCS development activities. The entire coastal region was included in the impacts analysis which focused on two situations. First, the impacts of man if OCS development does not occur, and secondly, if OCS development does occur.

Beaufort Sea Region Sociocultural Systems
(Technical Report #9 - June 1978)

Beaufort Sea Petroleum Development Scenarios,
Sociocultural Impacts
(Technical Report #22 - April 1978)

In part because of its isolation, but equally because of the resolve of North Slope Eskimos, attempts have been made to maintain the

traditional cultural, social, and economic lifestyle. However, these sociocultural systems are undergoing rapid and intense social, cultural, and economic change, in part because of ongoing Prudhoe Bay oil development and in part because of the Alaska Native Claims Settlement Act. This investigation sought to identify the values and lifestyles representative of the Inupiat Eskimo culture. Because of the subsistence lifestyle-of the traditional Inupiat culture, environmental and ecological impacts, such as those identified in the natural physical environment studies discussed above, which are expected to directly affect the Inupiat sociocultural system were evaluated. Also studied was the influence that additional employment opportunities resulting from OCS activities might have on the sociocultural system, particularly because such employment opportunities are expected to intensify inter-ethnic contact and relationships. Other potential impact categories include family relationships, social health, and the political system.

Anchorage Socioeconomic and Physical Baseline
(Technical Report #12 with Executive Summary
Report #12a - June 1978)

Beaufort Sea Petroleum Development Scenarios,
Impacts on Anchorage, Alaska
(Technical Report #13 - August 1978)

The potential impacts on the city of Anchorage were evaluated, largely because of the city's role as major financial, governmental and economic center in Alaska. In addition, Anchorage serves as the

administrative base for the Alyeska Pipeline and most of the major oil companies operating in Alaska. The Anchorage study focused on an evaluation of the influence of secondary economic growth on city services and facilities. The baseline constructed as a result of this effort was used as the foundation for subsequent assessments of Anchorage impacts in two later lease sales. Categories of activities examined in this analysis were: education, public safety, leisure, utilities, housing, health, health services, social services, transportation, and fiscal requirements. In subsequent studies of the Cook Inlet-Shelikof Strait Planning Unit in 1979, the baseline information contained in Technical Report #12 was updated and is now available in Volume 1 of Technical Report #48. (See Table 7).

Beaufort Sea Region Socioeconomic Baseline
(Technical Report #11 with Executive Summary
Report #ha - July 1978)

Beaufort Sea Petroleum Development Scenarios,
Summary of Socioeconomic Impacts
(Technical Report #23 - December 1978

Technical Reports 5, 8, 9, and 10, which treat socioeconomic, socio-cultural, and natural physical environment baselines, were summarized in a single regional socioeconomic baseline report. A similar summary of Beaufort Sea impacts was prepared using Technical Reports 13, 18, 19, 20, 21 and 22.

Prudhoe Bay Case Study

(Technical Report #4 - February 1978)

The Prudhoe Bay Case Study was the first of a series of special studies and explored the concept of enclave development in remote areas. The first portion of the study documented the present (1977) status of the working and living relationships at Prudhoe Bay, an industrial enclave built to tap the largest known oil and gas reserve in North America. The second portion of the study gleaned from the experience gained in constructing and operating facilities at Prudhoe Bay lessons that might be applied in the event that enclave development occurs elsewhere in the state.

It was learned that the development ofa self-sufficient enclave at Prudhoe Bay was the product of a number of factors, some of which were unique to the Prudhoe experience, others of which are likely to prevail with new discoveries. Some of the factors unique to Prudhoe include the size of the field, the remoteness of its North Slope location, the extreme climate and fragile terrain, and the lack of a regional transportation network or adequate outside transportation access for the movement of supplies and equipment. The most significant factor influencing development of an independent enclave appears to be the unavailability of nearby community infrastructure. At Prudhoe, the lack of nearby community infrastructure was compounded by the remoteness of its North Slope location.

Goverance in the Beaufort Sea Petroleum Development Region (Technical Report #16 with Executive Summary Report #16a - August 1978)

This study examined relationships between petroleum development and the evolution of local government institutions on Alaska's North Slope in the decade since the oil and gas discoveries at Prudhoe Bay in 1968. It focused on the North Slope Borough and found that the formation and major operations of the Borough were essentially responses to the problems and opportunities that Arctic oil and gas development present to the Native people of the region. In particular, it highlighted the reliance of the North Slope Borough on its major tax revenue base--the Prudhoe Bay Field. This tax base supported sizable Borough government employment in the villages and a massive capital improvements program which may profoundly affect the socio-cultural life of the region. The study also examined institutional relationships within the region, particularly those between the Borough and the villages and between the Borough and the Native regions' corporation. The study corroborated the findings of the Core Studies and generated a sense of confidence in the focus of Core Studies.

Gulf of Alaska Planning Unit

The Gulf of Alaska studies are being completed as this report is being written. These studies were carried out to estimate the potential impacts of Sale 55, which is the second sale proposed in this planning unit. The area of the sale for purposes of analysis was the entire northern portion of the planning unit stretching from Montague Island,

450 miles eastward to near Cape Fairweather, hence the "Northern Gulf of Alaska" reference. The area finally chosen by BLM for the second sale is the eastern portion of the planning unit and is referenced as the "Eastern Gulf of Alaska" lease sale in the Draft EIS. Planned SESP reports are identified in Table 5.

The original sale, number 39, held April 13, 1976, was the subject of considerable controversy, when held. However, after 11 unsuccessful exploratory wells over a two-year period drilling was suspended pending a further analysis of exploratory data. Other than reduced expectations, principal impact of the sale was construction of a small service base in the City of Yakutat. The city's population is mixed Native and White, but is predominantly composed of Tlingit Indians. Because of events that occurred there, Yakutat is seen as an example by other Alaska communities that development effects can be managed to some extent. Because the village corporation and city government controlled virtually all of the land fronting on Yakutat Bay, they were able to persuade the oil companies to relocate their proposed facility to a location away from the heart of the city. For purposes of the SESP, the Yakutat example highlights certain aspects of a community's potential response, including denial of onshore oil storage or distribution sites, strict controls on worker immigration, joint use of new facilities, assignment of facilities to local control at the shut-down-phase, and partial shift of certain industry demands to other locations.

TABLE 5

A Listing of Gulf of Alaska Planning Unit Reports
Prepared for
Alaska OCS Socioeconomic Studies Program

Title	Author	SESP Technical Report Number(s)	Date	Availability
CORE STUDIES				
Northern Gulf of Alaska Petroleum Development Scenarios**	Dames & Moore	29 and 29a	March, 1979	Hardcopy - A18/$13.25, PB 294229/AS*
Northern and Western Gulf of Alaska Petroleum Development Scenarios, Local *Fishing* Industry Impacts	University of Alaska Sea Grant Program	30	--	January, 1980
Northern Gulf of Alaska Petroleum Development Scenarios, Transportation Systems Impacts	Peter Eakland & Associates	31	--	January, 1980
Northern and Western Gulf of Alaska Petroleum Development Scenarios, Local Socioeconomic Baseline	Alaska Consultants, Inc.	32	Nay, 1979	Hardcopy - $15.50 PB 296971/AS*
Northern Gulf of Alaska Petroleum Development Scenarios, Local Socioeconomic Impacts	Alaska Consultants, Inc.	33 and 33a	Oct., 1979	December, 1979
Northern Gulf of Alaska Petroleum Development Scenarios, Economic and Demographic Impacts	*Institute* of Social and Economic Research	34 and 34a	June, 1979	Hardcopy - $12.50 PB 297722/AS*
Northern Gulf of Alaska Petroleum Development Scenarios, Sociocultural Impacts	Marsha Bennett	36	Sept., 1979	November, 1979

* These documents are available from National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161

** An Executive Summary is available from: Coordinator, Socioeconomic Studies Program, BLM Alaska Outer Continental Shelf Office, p. O. Box 1159, Anchorage, AK 99510

Northern Gulf of Alaska Petroleum Development Scenarios (Technical Report #29 with Executive Summary Report #29a March 1979)

Preparation of the second generation Gulf of Alaska scenarios focused on Sale 55, originally scheduled for June 1980 and now rescheduled for October 1980. The coastal study area was divided into three OCS shelf areas labeled Middleton, Yakataga, and Yakutat. Exploration activities of the prior sale, number 39, were concentrated in the Yakataga shelf area. On the basis of exploration results, the study assumed significantly reduced potential for the existing sale area and remainder of the Yakataga shelf. The technology and environmental investigation focused on the severe storm, wind and wave actions, seismic problems, and unstable bottom soils with low bearing Capacities. Well and platform requirements, production schedules, onshore facility needs, and associated employment estimates are included in the analysis. Several maps showing the general location of various petroleum development facilities and activities are also included. Three scenarios were selected: Exploration only, 5% case, and statistical mean. Monthly average manpower requirements were estimated to exceed 10,500 persons during peak years of the 5% case, only about 700 persons are likely to be needed during peak years of the exploration only case.

Northern Gulf of Alaska Petroleum Development Scenarios, Economic and Demographic Impacts (Technical Report #34 with Executive Summary Report #34a - June 1979)

The economic and demographic analysis focused on the state as a whole, the Southcentral region and its six census divisions, and Anchorage as an associated impact area. This study emphasizes the effect on the aggregate indicators of economic activity--employment, population, and personal income; the state's fiscal position measured by its effect on fund balances; individuals' earnings as measured by real per capita income; and the average level of state services as measured by real per capita state expenditures. The study examines the effect on the components of population growth, the proportion of the population which is working (the dependency ratio), the structure of employment, and the regional distribution of growth.

The economic and demographic change is examined against two points of comparison. First, the effect on OCS development is compared to growth in the historical period. ' Examining growth in the historical period provides an understanding of how the economy works. Secondly, the growth of the economy without Northern Gulf OCS development.

Northern Gulf of Alaska Petroleum Development Scenarios, Transportation Systems Impacts
(Technical Report #31 - Expected January 1980)

The transportation systems impacts analysis concentrated on the air and water transportation modes of the Southcentral region. Ports and airport characteristics of the region were examined together with the capacity and routing of scheduled ships and planes. Cargo movements were

examined as to general origin-destination relationships and demands. OCS demands were imposed on these various characteristics to identify significant system elements that might be effected. Barge activity, the present tanker traffic out of Valdez, and the Marine Highway System were a part of the analysis.

Northern and Western Gulf of Alaska Petroleum Development Scenarios, Commercial Fishing Industry Analysis
(Technical Report #30 - Expected January 1980)

The study of the Gulf of Alaska commercial fishing industry was the first of a series of studies looking at the relationship between fishing and OCS petroleum development. The Gulf of Alaska is an area rich in fish resources and commercial fishing is the major economic activity. Sport fishing is also a major activity. Fish processing activities in the communities of Seward, Cordova, Yakutat and Kodiak, together with fish harvesting activities in adjacent waters of the Gulf of Alaska, were evaluated. Fisheries by species for Salmon, Halibut, Herring, King Crab, Tanner Crab, Dungeness Crab, Shrimp, Razor Clams, and Scallops were identified and associated resource levels were discussed. Components of the harvesting and processing activities were identified and described in detail. In the development and assessment of forecasts for each of these components, ocean space use conflicts, competition between recreational and commercial fisheries, marketing considerations, local versus non-local participation, the organization of the fishing industry, and other factors of change were all taken into account.

Northern and Western Gulf of Alaska Petroleum Development Scenarios, Local Socioeconomic Baseline (Technical Report #32 - May 1979)

Northern Gulf of Alaska Petroleum Development Scenarios, Local Socioeconomic Impacts (Technical Report #33 with Executive Summary Report #33a October 1979)

The evaluation of local socioeconomic systems in the Northern Gulf of Alaska appears in the two reports cited above. Regarding Northern Gulf communities, the baseline document consists of a review of existing population and economic conditions in Yakutat, Cordova, and Seward; an overview of land use patterns, land tenure and housing conditions in and around these communities; an outline of specified community facilities and utilities services; plus a review of local government powers and the financial condition of each community. For the Western Gulf of Alaska lease sale, the city of Kodiak was included in the baseline document with similar discussions of community facilities, services, and government powers. Potential impacts on population, employment, housing, selected community facilities and utilities, and the financial condition of these communities is contained in the second report cited above. Impacts are estimated for both a non-OCS and several OCS cases.

Northern Gulf of Alaska Petroleum Development Scenarios, Sociocultural Impacts (Technical Report #36 - August 1979)

This report is an evaluation of the sociocultural systems of two towns: Cordova-Eyak and Seward. Its purpose is to provide both a methodology and a detailed community level information base for these towns with particular emphasis on analyzing social organization, social conflict, social change and recent events occurring within these two towns. In addition, the report attempts to place these two towns and the effects of OCS petroleum development on them within a regional context while still maintaining a town focus. Attention is thereby drawn to the response capacity of the social system of these two towns to adapt to changes which have already occurred recently or are likely to occur in the near future. Community history and community's relationship to its physical setting and regional environment is also described.

Kodiak Planning Unit

Studies in the Kodiak planning unit, which are soon to be completed, center on proposed Sale 46, which was cancelled and delayed in 1976. This series of studies refers to the planned sale as the "Western Gulf of Alaska Sale." Studies are looking principally at effects on the Kodiak Island Borough, Kodiak City, and seven small coastal communities and villages scattered about the island, The latter group are all Native communities and are being treated collectively as well as individually. The city of Seward is also involved in the evaluation because of potential cumulative effects resulting from the planned Gulf of Alaska Sale 55. The type of studies ongoing are typical of those in the program. Reports expected from the studies are identified in Table 6. It is anticipated that certain of these studies will be useful in

TABLE 6

A Listing of Kodiak Planning Unit Reports
Prepared for
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Title	Author	SESP Technical Report Number(s)	Date	Availability
CORE STUDIES				
Western Gulf of Alaska Petroleum Development Scenarios**	Dames & Moore	35 and 35a	March 1979	Hardcopy - A17/$13.00, PB 294281/AS*
Western Gulf of Alaska Petroleum Development Scenarios Economic and Demographic Impacts*	Institute of Social and Economic Research	38 and 38a	August 1979	September 1979
Northern & Western Gulf of Alaska Petroleum Development Scenarios, Commercial Fishing Industry Analysis	University of Alaska Sea Grant Program	30	--	January 1980
Western Gulf of Alaska Petroleum Development Scenarios, Local Socioeconomic Impacts**	Peter Eakland & Associates	37	--	January 1980
Western Gulf of Alaska Petroleum Development Scenarios, Non-Native Sociocultural Impacts	Alaska Consultants, Inc.	40 and 40a	November 1979	December 1979
Western Gulf of Alaska Petroleum Development Scenarios, Non-Native Sociocultural Impacts	Jim Payne	39	--	January 1980
Western Gulf of Alaska Petroleum Development Scenarios, Kodiak Native Sociocultural Impacts	Nancy Davis	41	October 1979	November 1979

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developing the Cook Inlet-Shelikof lease sale EIS. Some aspects of this latter sale may affect the northern tip of the Kodiak Borough.

Cook Inlet-Shelikof Strait Planning Unit

Like studies in the Northern Gulf of Alaska, ongoing studies in the Cook Inlet-Shelikof Strait planning unit focus on a second-generation lease sale, Number 60, currently planned for September 1981. The new sale area lies generally south of the original CI sale area in the vicinity of the "Kennedy Entrance" to Cook Inlet and extends southward into Shelikof Strait to just south of Afognak Island. The area also includes blocks north of Kachemak Bay. With the exception of the scenarios, all work in this planning unit is ongoing. Planned reports are identified in Table 7. Contents and focus of these reports are typical of those prepared in prior studies. Communities and areas included in these reports are the Kenai-Soldotna-Nikiski area, Homer, Tyonek, English Bay, Port Graham, Seldovia and Ninilchik.

Norton Basin Planning Unit

Norton Basin studies which recently began are concentrated in the coastal region surrounding Norton Sound and includes much of the Seward Peninsula and St. Lawrence Island. The Norton Basin Sale, number 57, is currently scheduled for September 1982. Planned studies focus considerably on Nome, Alaska, because of its role as a regional center for transportation and government. Socioeconomic baseline information is also being gathered in Kotzebue, although no impact studies will be conducted there. The sociocultural investigation begun during Phase III

TABLE 7

A Listing of Cook Inlet-Shelikof Strait Planning Unit Reports
Prepared for
Alaska OCS Socioeconomic Studies Program

Title	Author	SESP Technical Report Number(s)	Date	Availability
CORE STUDIES				
Lower Cook Inlet and Shelikof Strait Petroleum Development Scenarios**	Dames & Moore	43 and 43a	July 1979	August 1979
Lower Cook Inlet Petroleum Development Scenarios, Economic and Demographic Analysis	Institute of Social and Economic Research	42	--	January 1980
Lower Cook Inlet Petroleum Development Scenarios, Transportation Systems Analysis	Peter Eakland and Associates	45	--	February 1980
Lower Cook Inlet Petroleum Development Scenarios, Commercial Fishing Industry Analysis	University of Alaska Sea Grant Program	44	--	February 1980
Lower Cook Inlet Petroleum Development Scenarios, Local Socioeconomic Systems Analysis	Alaska Consultants Inc.	46	--	February 1980
Lower Cook Inlet Petroleum Development Scenarios, Sociocultural Systems Analysis	Steve Braund and Steve Benke	47	--	February 1980
Gulf of Alaska and Lower Cook Inlet Petroleum Development Scenarios, Anchorage Impact Analysis	Policy Analysts, Limited	48	--	January 1980

** An *Executive Summary* is available from: Coordinator, Socioeconomic Studies Program, BLM Alaska Outer Continental Shelf Office, P.O. Box 1159, Anchorage, AK 99510

TABLE 8

A Listing of Norton Basin Planning Unit Reports
Prepared for
Alaska OCS Socioeconomic Studies Program

Title	Author	SESP Technical Report Number(s)	Date	Availability
CORE STUDIES				
Bering-Norton Petroleum Development Scenarios	Dames & Moore	49	--	January 1980
Bering-Norton Petroleum Development Scenarios, Economic and Demographic Analysis	Institute of Social and Economic Research	50	--	May 1980
Bering-Norton Petroleum Development Scenarios, Transportation Systems Analysis	Peat, Marwick, Mitchell & Co.	52	--	May 1980
Bering-Norton Petroleum Development Scenarios, Commercial Fishing Industry Analysis	University of Alaska Sea Grant Program	51	--	May 1980
Bering-Norton Petroleum Development Scenarios, Local Socioeconomic Systems Analysis	Policy Analysts, Limited	53	--	May 1980
Bering-Norton Petroleum Development Scenarios, Sociocultural Systems Analysis	Linda Ellanna	54	--	May 1980

and continued in Phase IV encompasses coastal villages from Shishmaref on the Seward Peninsula to Alakanuk at the mouth of the Yukon River. The transportation study is attempting to describe all western Alaska transport systems in addition to identifying impacts in the Norton Basin. This baseline information can then be used by transportation contractors in subsequent western Alaska lease sales. A similar attempt is being made to define the western Alaska commercial fishing industry. Reports anticipated from these studies are listed in Table 8.

Other Special Studies

While several special studies were conducted to benefit a particular lease sale, all such studies are valuable program-wide. The discussions that follow identify each of the other special studies and their significant features. For a listing of these reports and their availability, see Table 9.

Definition of Alaska Petroleum Development Regions. (Technical Report #1 - September 1978)

When the SESP began there was a need to correlate standard data collection districts, such as census districts or labor market districts, with expected boundaries of potential petroleum development activities. The results were Petroleum Development Regions which are presented in this report. These boundaries provided initial data-gathering and impact analysis areas which are refined and altered as Petroleum Development Scenarios and other research products become available. The boundaries defined in this report generally accord with those of Native Corporations

TABLE 9

A Listing of Program-wide Studies Reports
Prepared for
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Title	Author	SESP Technical Report Number(s)	Date	Availability
Definition of Alaska Petroleum Development Regions	Peat, Marwick, Mitchell & Co. et. al.	1	September 1 97a	Hardcopy - A08/$8.00 PB 29191 5/AS*
Literature Survey	Peat, Marwick, Mitchell & Co. et. al.	2	Apri 1 1977	Hardcopy - A21/$15.00 P8 269244/AS*
Case Study of Copper Center, Alaska**	Holly Reckord	7 and 7a	March 1979	Hardcopy -$9.50 PB 296961/AS*
Alyeska-Fairbanks Case Study	Wordsmiths, Inc.	14	May 1978	Hardcopy - A04/$7.25, PB 284570/AS*
Historical Indicators of Alaska Native Culture Change**	Nancy Davis	15 and 15a	September 1978	Hardcopy - A08/$8.00 PB 294130/AS*
Monitoring Petroleum Activities in the Gulf of Alaska	Dames & Moore	17	August 1978	Hardcopy - A5/$6.00 PB 285408/AS*
Design of a Population Distribution Model	Institute of Social and Economic Research	24 and 24a	Apri 1 1979	May 1979
Developing Predictive Indicators of Community and Population Change**	Institute of Social and Economic Research	26 and 26a	Apri 1 1979	May 1979
OCS Visual Resources Management Methodo 1 ogy Study	Harmon, O'Donnell and Henninger Associates, Inc.	27	March 1979	Hardcopy $6.50 PB 294835/AS*
Socioeconomic Impacts of Selected Foreign OCS Developments	Habitat North, Inc.	20	Apri 1 1979	Hardcopy $11.75 PB 2971 14/AS*

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in onshore areas adjacent to lease-sale areas. Some regions are further modified to accord with certain labor, census, and political boundaries.

Literature Survey (Technical Report #2 - April 1977)

The document contains a comprehensive literature review that has a broad relevance to OCS development in Alaska and four petroleum development regions: The Beaufort Sea Region; Bering Sea Region; Southwest Region; and the Gulf of Alaska Region. Sixteen chapters discuss the most relevant literature, current research and data gaps. Each subject chapter includes a bibliography listing literature cited. A master bibliography of the 1200 items surveyed, and an index to that bibliography by subject, keyword, and OCS region is also included. The following categories are presented:

1. Economy
2. Oil and Gas Resources
3* Population
4. Revenue and Taxation
5. Governance
6. Education
7. Heal th
8. Social Services
9. Public Safety
10. Cultural Patterns
11. Subsistence
12. Land Use and Land Status
13. Transportation, Communication and Utilities

14. Housing

15. Archaeological/Historical and Recreational/Scenic Resources

16. Natural Development Constraints

Case Study of Copper Center, Alaska

(Technical Report #7 with Executive Summary Report #7a - March 1979)

Copper Center is a small inland village on the Copper River northwest of Valdez and east of Anchorage. The Richardson Highway runs through Copper Center as does the trans-Alaska pipeline. Copper Center has been typified in the report, as the one community that ".. .perhapsm ore than any other community in Alaska is undergoing intense rapid culture change as a direct result of the pipeline construction and associated activities."

When pipeline construction began, Copper Center was ill-prepared to control construction-related activities. As a consequence, it appears that the community experienced physical, social and cultural losses. Population increased from 206 in 1970, to 433 in 1973, to 750 in 1975. Residents were endangered in their use of the roadway which was usurped by heavy equipment driven at high speed. The local stores were purchased by "outsiders" who altered traditional credit policies. Racial conflict between white and Native high school students resulted in a significant Native dropout rate.

Copper Center has been studied and surveyed by diverse investigators for a number of years. The product of these studies had not been compiled

into a single report reflecting the significant lessons possible to be gleaned from Copper Center. With the termination of pipeline construction and its attendant closure of work camps, information about the effects of phasing out the economic force that drove the community into and through its period of change had not been developed.

The history of Copper Center is important to the Program because it is the sole recent example of the passage ofa racially mixed Alaskan community throughout all phases of development. Copper Center does not have the continuing presence of a major industrial facility and workforce providing long-term stability. The Copper Center study reveals some ingredients of the development of community infrastructure essential to the management of change. Community leaders feel that they are now prepared to deal effectively with the next project. How this community capacity develops may be a key factor in the assessment of other Alaskan communities. The fins" report from this study, now being revised, points out the equivoca' nature of many impacts and highlights when, in the process of industrial development, positive and negative changes are felt by different subsets of a community population.

Alyeska-Fairbanks Case Study

(Technical Report #14 - May 1978

Fairbanks, Alaska was the only urban community in the construction corridor of the TAPS oil pipeline. The community was faced with planning and decision-making to prepare for the impact of the pipeline, but had to do much of that planning without information. Population growth, stress

on the Fairbanks infrastructure, social problems and the continuation of the economic cycles of "boom and bust" were examined through three major impact research works completed during and just after pipeline impact. Synthesis of this information detailed what the community of Fairbanks learned about the impacts of industrial growth, the changing attitudes toward future growth and development, and how the community is and is not applying the lessons of oil pipeline impact to planning and decision-making for future developments, including continued oil and gas activity in the North Slope and Beaufort Sea.

Fairbanks is likely to provide substantial staging, manpower, and facilities support for OCS development. The study of the experience of Fairbanks during pipeline construction provided the Program with indications of the type and direction of impacts and responses likely to occur in Fairbanks as the result of OCS development in the Beaufort Sea. The findings of the study were used both in connection with these projections as well as in the analysis of potential impacts on other, prospective urban staging areas.

Historical Indicators of Alaska Native Culture Change, (Technical Report #15 with Executive Summary Report #15a - September 1978)

This investigation collated and synthesized existing knowledge on the sociocultural aspects of Alaska communities, particularly small communities which seem likely to be most susceptible to rapid, exogenous change similar to that likely to be induced by OCS development. The

analysis built on the relatively large but somewhat incoherent body of literature which already exists dealing with the impacts of modernization and industrialization in Alaska and with the culture, history, and social organization of many arctic and subarctic communities and populations in Alaska and Canada. Findings of the synthesis will contribute to the construction of impact projections and guide future Program research activities.

It was found that the anthropological literature published to date does not provide precise indicators of change which would be useful for the exact projection of future directions, nor information about types of communities, stages of community development, or the response capacity of community institutions. The literature reviewed was excellent anthropology; each major reference is a valuable contribution" However, it contained insufficient theoretical discussion to allow transfer to specific places and situations currently anticipating industrial development. The literature was excellent as an historical perspective to "provide an awareness of the traditional and changing Native cultures of Alaska, and a background for understanding the cultural distinctions and various responses to changes in the past.

Monitoring Petroleum Activities in the Gulf of Alaska,
(Technical Report #17 - August 1978)

The petroleum technology presently in use in the state, as evidenced by the equipment representing the technology, will largely dictate the employment impacts of petroleum development. Thus, petroleum technology/

equipment plays an important role in preparing petroleum development scenarios which are used as the basis for impact evaluation. At present neither "in-use" nor "available" technology/equipment has been defined - no technology baseline has been established.

The objective of this study was twofold. The first objective was to obtain an accurate, historical accounting of events, equipment, timing, employment, wages, locations, requirements, amounts, and effects of OCS activity related to Gulf of Alaska Lease Sale No. 39; Lower Cook Inlet Lease Sale CI, and Gulf of Alaska (including Cook Inlet) Continental Offshore Stratigraphic Test (COST) well 1. The second objective was to build upon the monitoring data above, by collecting and analyzing other applicable data, to assemble a data and analysis base for preparation of the petroleum development scenarios for subsequent Northern and Western Gulf of Alaska and Cook Inlet lease sales.

Design of a Population Distribution Model
(Technical Report #24 with Executive Summary Report #24a - April 1979)

The principal objective of this study is to design a population distribution model that suits the special needs of the Program and BLM with respect to projecting population changes due to OCS activities.
Several standard population projection techniques and wide variety of population distribution processes have been devised for Alaska. Typically, these techniques have been expressed in models of population projection and distribution which are functionally interactive with an economic or

employment forecasting model. Most of these models have been developed with objectives different from those of the Program and using different data bases.

In this study the investigator explored available population distribution models and methods to determine their applicability to the SESP technical process, BLM's Environmental Impact Statement (EIS) requirements, and the unique data base and data reporting systems that exist in Alaska. After particular model or models exist that are relevant to the Alaska situation, identifying an applicable model, the investigator determined how the model might be implemented and provided a test application of the model using available Kenai Peninsula data.

Developing Predictive Indicators of Community and Population Change (Technical Report #26 with Executive Summary Report #26a - April 1979)

The objective of this project was to analyze data already assembled on a sample of Alaskan communities which have either recently experienced or expect to experience rapid change as a result of energy-related development in order to: (1) identify the most important social and economic changes which have been observed in existing impacted communities; (2) identify the most important interrelationships among these social and economic changes; (3) determine the resident and community characteristics which appear to have the strongest relationships with observed response patterns, and; (4) in conjunction with OCS development scenarios and estimated immigrant and resident characteristics and community

response capabilities, develop methods for projecting the character and magnitude of the interrelationships identified in (2) above.

This study focused on data assembled for the communities of Fairbanks and Valdez, describing the recent growth and change in these locations and their social characteristics and service needs as a function of recent oil and gas or related industrial developments and the associated effects of such development on the population composition of the community. The study focuses particularly on the development of a series of "predictive indicators" of community change which in turn may be used as a foundation for projecting possible OCS impacts in other, similar areas. These tasks represent a limited distillation of the current state of the art of social impact assessment as conducted previously in Alaska; as such, they may provide substantive or methodological guidelines to the Program.

OCS Visual Resources Management Methodology Study

(Technical Report #27 - March 1979)

It is anticipated that exploration and development of oil and gas resources on the Alaska OCS, which requires the siting, construction, and operation of drilling structures and related support facilities will cause potentially significant, but possibly avoidable, changes to visual resources. Prior to such development, the BLM/AOCS Office must assess these changes using a rational and timely methodology.

Although BLM has available a Visual Resource Management (VRM) System,

certain portions of the system are deficient because the system was not designed for OCS use. Therefore, the purpose of the visual resources methodology study was to evaluate and correct these deficiencies in order to more accurately portray vistual impacts resulting from OCS-related activities. This included development of a comprehensive site specific inventory of visual components, assessment of visual impacts by a variety of viewers, a contrast rating system specifically designed for OCS-related activities based on visual components identified, and guidelines for the development of comprehensive mitigatory measures to reduce the identified impact areas with high contrast ratings.

Socioeconomic Impacts of Selected Foreign OCS Developments (Technical Report #28 with Executive Summary Report #28a - April 1979)

The development of OCS petroleum resources in arctic and subarctic waters is essentially without precedent in the United States. Nowhere in American waters has the offshore petroleum industry faced a combination of complex conditions equivalent to those presented in Alaska. Frigid climate, pack ice, extreme remoteness, scarce support resources, rich marine life, Native American village life, and a burgeoning fishing industry all present socioeconomic investigators with a unique set of analytic problems. Technological and socioeconomic lessons learned in more supportive natural and human environments are not particularly useful analogs to the potential Alaska experience.

Two areas of greater technological and socioeconomic comparability with

a more extensive history of actual, as opposed to hypothetical, development are in the North Sea and the Canadian Beaufort. The North Sea experience, like the Gulf of Alaska, involves a large fishing industry, stormy waters, and small, remote traditional human communities. To the extent that the technology and pattern of development between the North Sea and subarctic Alaska are considered similar, certain resulting socioeconomic impacts may be distilled by comparative analysis and refine the Program's impact projections, assumptions, methods, and standards. Much of this information is readily available in studies completed or currently in process by British and Norwegian investigators.

This study synthesized from recent documents those features of North Sea (Great Britain and Norway) and Canadian Beaufort OCS development and their socioeconomic consequences in which there is reason to believe that findings would be transferable to the Alaska setting. Such findings can be utilized as additional experience-based indicators and assumptions in Program impact projections.

Four critical aspects of the potential Alaska experience which can be derived from analysis of North Sea experience include conflict and confluence between fishing and petroleum industries, the impact of petroleum development on local and regional government, social change, and the impacts of various forms of industrial phaseout. The Canadian Beaufort experience highlights the changes brought about in the lives of the indigenous Arctic people by nearby OCS petroleum activity.

V. FUTURE WORK

In October 1979, the SESP begins Phase V, its fourth year of operation. So long as BLM continues to schedule lease sales, the need for EIS and other decision-related information will also continue. As mentioned earlier in this report, Phase V also marks the beginning of BLM's management of the full program on a day-to-day basis and expansion of BLM's SESP staff to accomplish this end. This chapter attempts to describe the expected character and operation of Phase V.

Because of new additions to the lease sale schedule Phase V, and most likely Phase VI, will be concentrated in western Alaska OCS planning units. Based on the lease sale schedule, planning unit studies in western Alaska will sequentially consider the St. George Basin, Northern Aleutian Shelf, Northern Navarin Basin, and Chukchi Sea. Also included on the schedule is a second-generation sale in the Beaufort Sea. Since the Beaufort sale is scheduled on the heels of the initial sale, BLM has yet to decide the extent of additional studies necessary to support the second sale.

With the exception of scenarios which are discussed further on, the general types of studies will remain similar to those identified in the technical process discussion: statewide/regional economic and demographic systems, transportation systems, commercial fishing industry, local socioeconomic, local sociocultural, natural physical environment, and Anchorage. Based upon the location and nature of the problems to be addressed, the scopes of work may vary slightly from those used now.

In part this reflects learnings over the past three years. Contractors for this work will be chosen on the basis of competitive proposals.

Regarding the scenarios, BLM is expected to contract for appropriate petroleum-related technological, environmental, development cost and marketing information, but will prepare the scenarios themselves. Preparation of the scenarios will follow the tract selection step in BLM's OCS management process (see Step 3, Table 2). This will allow BLM to focus the impacts analysis on only the geographical area initially proposed for the sale. In the past, the SESP attempted to prepare scenarios in advance of tract selection, because they were another source of information in that decision step. However, in doing so, the program examined impacts over the entire p arming unit. This new approach reduces the areal considerations, allows BLM staff to become more involved in the technical work and al ows them to more closely integrate the technical studies into the decision process.

BLM will also institute other changes in the relationship between SESP products and the EIS process. During the first four phases of the SESP, preparation of the EIS required two iterations of the technical process, once by the contractors and once by BLM staff. This was done because USGS would typically make new resource evaluations available during the initial tract selection process. The contractors would conduct a planning unit-wide analysis using publicly-available USGS information. Following tract selection BLM would have available from USGS more detailed and updated information which they would use in a second iteration

of the technical process. Information developed on the second run-through of the process was used in the EIS. For this reason, the emphasis of subcontractors' work has been on developing the most accurately obtainable baseline description and analysis of how things worked, and on developing and rigorously documenting the assumptions, standards and methodologies necessary to do detailed impacts analyses. On the surface, this redundancy may appear to be inefficient, but it offered BLM staff members the opportunity to better integrate the results of the various contractors. However, because of the additional time required by BLM staff to duplicate the impacts analysis, this approach imposed severe time constraints on contractors.

BLM's new approach would eliminate the two iterations. Scenarios would be prepared by BLM following tract selection so the most recent USGS data would be used. Impacts analysis tasks by contractors will follow using the final scenarios. Consequently, because the analysis is sale specific, SESP products will be more directly usable in preparing the EIS and other decision documents. However, increased emphasis will be placed upon the impacts analysis portion of the work because of its subsequent use in the EIS. Time constraints on the impacts work are likely to continue, but contractors should have more time to complete the baselines analyses and to prepare and document necessary assumption and standards.

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