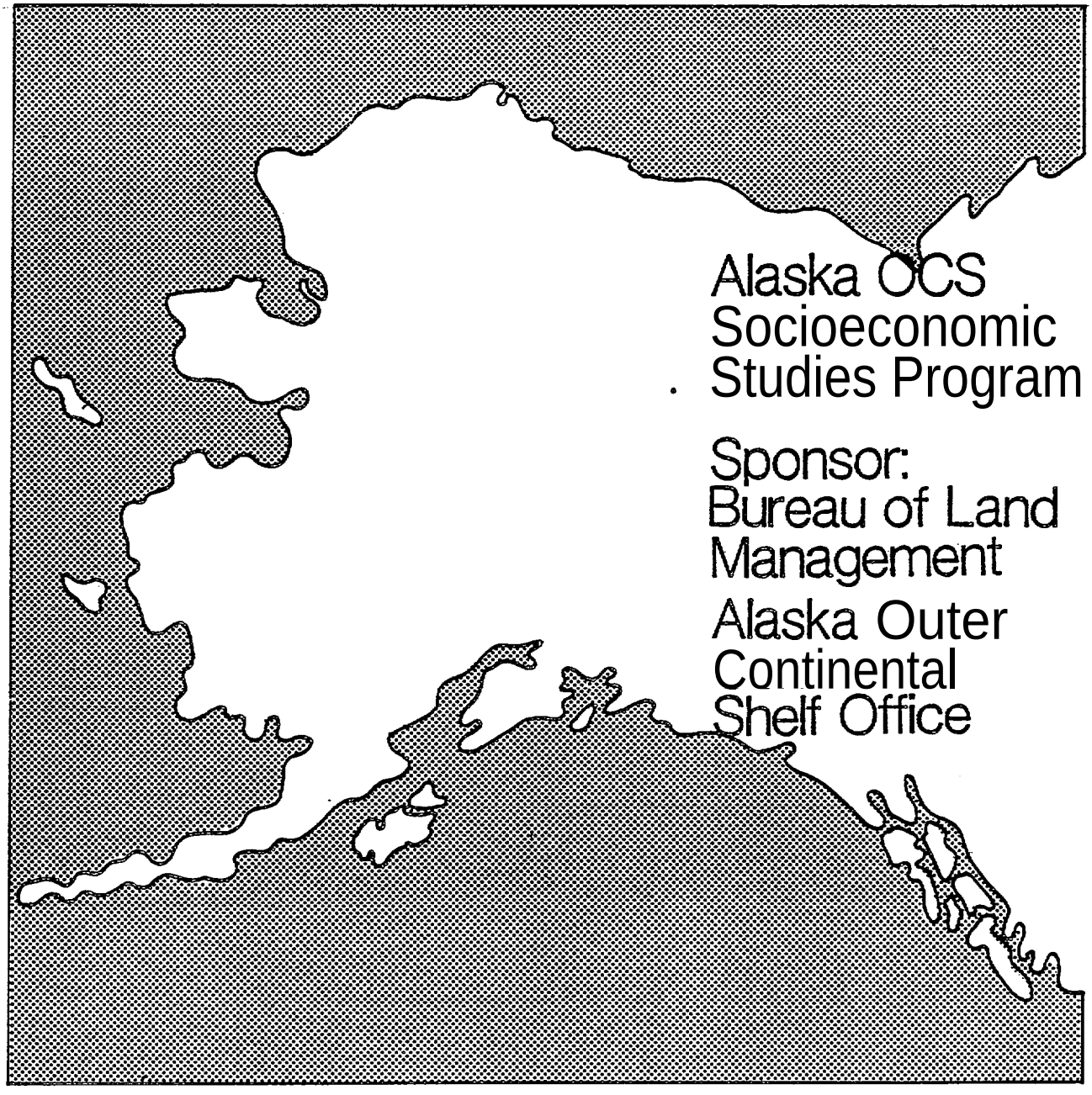
Technical Report
Number 76



Forecasting Enclave Development Alternatives and Their Related Impacts on Alaskan Coastal Communities as a Result of OCS Development

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: Number 76

ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM

FORECASTING ENCLAVE DEVELOPMENT ALTERNATIVES AND THEIR RELATED IMPACTS ON ALASKAN COASTAL COMMUNITIES AS A RESULT OF OCS DEVELOPMENT

FINAL REPORT

Prepared for:

MINERALS MANAGEMENT SERVICE
ALASKA OUTER CONTINENTAL SHELF OFFICE

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FORECASTING ENCLAVE DEVELOPMENT ALTERNATIVES AND THEIR RELATED IMPACTS ON ALASKAN COASTAL COMMUNITIES AS A RESULT OF OCS DEVELOPMENT

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APPENDICES:

ABSTRACT

This report presents a model designed to assist MMS/OCS planners in predicting the socioeconomic and cultural impacts on Alaskan communities associated with offshore oil exploration and development. The model provides a synthesis of past research and new Alaskan field work concerning the ways in which these impacts will differ, given different types of onshore industrial facilities and different levels of isolation from, or integration with coastal, predominantly native communities.

The model is divided into three elements dealing with (1) Industry-Community Decisions, (2) Direct Impacts and (3) Indirect Impacts. The industry-community decisions relate to location, sharing of community facilities and policies toward housing and the presence of newcomers in the community.

Twelve categories of direct impacts were identified along with 135 types of potential indirect impacts. Each indirect impact was linked to a category and level of direct impact based on the most recent research in the field.

This model was applied to the areas of Nome and Dutch Harbor/Unalaska to determine a set of direct and indirect community impacts under alternate siting decisions for OCS-related onshore facilities located in or near those communities.

INTRODUCTION

An onshore industrial facility, such as a supply base for exploration rigs offshore, a construction camp for building plants and other facilities during the development phase, or an LNG plant and associated facilities for full-scale production, can take many forms. On one extreme, the onshore base can be located within an existing Eskimo village or a mixed native and white town such as Nome; with oil industry and support workers living in the community and the industry using local labor, suppliers and contractors, as well as local utilities and services.

On the other extreme, the industrial facility can be established as a bounded and self-contained enclave, either immediately adjacent to an existing community or at some geographically isolating distance. In this case an existing village or town can be classified by the companies involved as "off limits" to industry employees who can be housed within the enclave during their shifts of duty. Obviously, the socioeconomic and cultural changes, both positive and negative, experienced in the nearby community would seem to be considerably less than, and would certainly be different from, those expected to occur in communities where the onshore industrial activity and work force were wholly integrated into residential areas and community activities.

Our tasks for this project have been: to study the variety of industry options and procedures associated with offshore oil development; to analyze situations where development has occured in Alaska, Canada and Scotland; to identify and incorporate available research on the social impacts of energy developments upon small communities and apply that research to the characteristics of communities in Alaska; and to build and test a model for use by Mineral Management Service (MMS) planners as an aid in their attempts to assess the social and economic consequences of OCS lease sales.

In the course of this research we have consulted with and received comments from representatives of the oil industry and coastal communities. We have visited and gathered information from a number of communities including Kenai, Soldatna, Nome, Dutch Harbor/Unalaska, Prudhoe Bay, and Inuvik and Tuktoyuktuk

(N. W. T.) and relied heavily upon the experiences of the research team from similar work in communities throughout the Arctic and Subarctic region as well as communities affected by energy developments in the lower forty-eight.

This report is produced under contract AA851-RPO-33 and builds upon earlier work presented in Technical Memoranda EN-1 through EN-5. Memos EN-1 and EN-2 analyzed past research relevant. to OCS development in Alaska. Memo EN-3 provided a framework with assumptions used for the draft model of socio-cultural impacts presented in EN-4. A test of the model in two locations is given in EN-5. This final report incorporates several refinements to the model necessary to make it an accurate but workable tool for MMS planners. The model test in EN-5 is appended to this report.

The following text is divided into three parts. Part One is an overview of the sociocultural impact model, its purpose, structure and limitations. A discussion of the process of negotiation between a community and oil developers is included in this section, as well as an explicit listing of the points in the model where the negotiation process is taken into account, and the manner in which the model can respond to alternative assumptions about the results of the negotiation process in a given community.

Part Two is a presentation of the model components which establishes key concepts, definitions and general procedures. Part Three provides the step-by-step tasks and procedures necessary for applying the model.

The team members who contributed to this report were: Peter Cook - Project Manager, Dr. Charles Cortese - Principal Investigator, Jane Angvik - Community Planner, and Susan Todd - Economist. Participating in prior research were: Dr. Lee Huskey - Economist, Dr. Phillip Rowe - Economist, Dr. Delbert Ward - OCS Industry Specialist, Dr. Gunnar Knapp - Economist, Dr. Joseph Jorgensen - Anthropologist, Cynthia Cook - Sociologist, Robert Knoll - Community Planner, Delbert Ward - Construction Engineer, David Dornbusch - Regional Planner, and Randal Ramuglia and Bridget Easely - Research Assistants.

PART ONE

MODEL OVERVIEW: THEORY, CONCEPTS ANO DEFINITIONS

A. PURPOSE OF THE MODEL

The Minerals Management Service (MMS) of the U.S. Department of the Interior is responsible for producing an Environmental Impact Statement (EIS) for each lease sale of offshore areas for oil and gas development. As part of the EIS process, MMS must identify a reasonable set of assumptions concerning the onshore facilities that will result from each level of potential oil and gas exploration, development and production as well as their associated impacts. MMS examines environmental, socio-economic and cultural impacts. This model, however, addresses only the socio-economic and cultural impacts.

Since the process of siting onshore facilities is a combination of industry, community and land-owner decisions, it is relatively difficult to portray in simple terms. In addition, the uncertainty of the size of any resources to be discovered complicates the forecasting of industry needs, which must be identified in order to predict direct and indirect impacts on the local community.

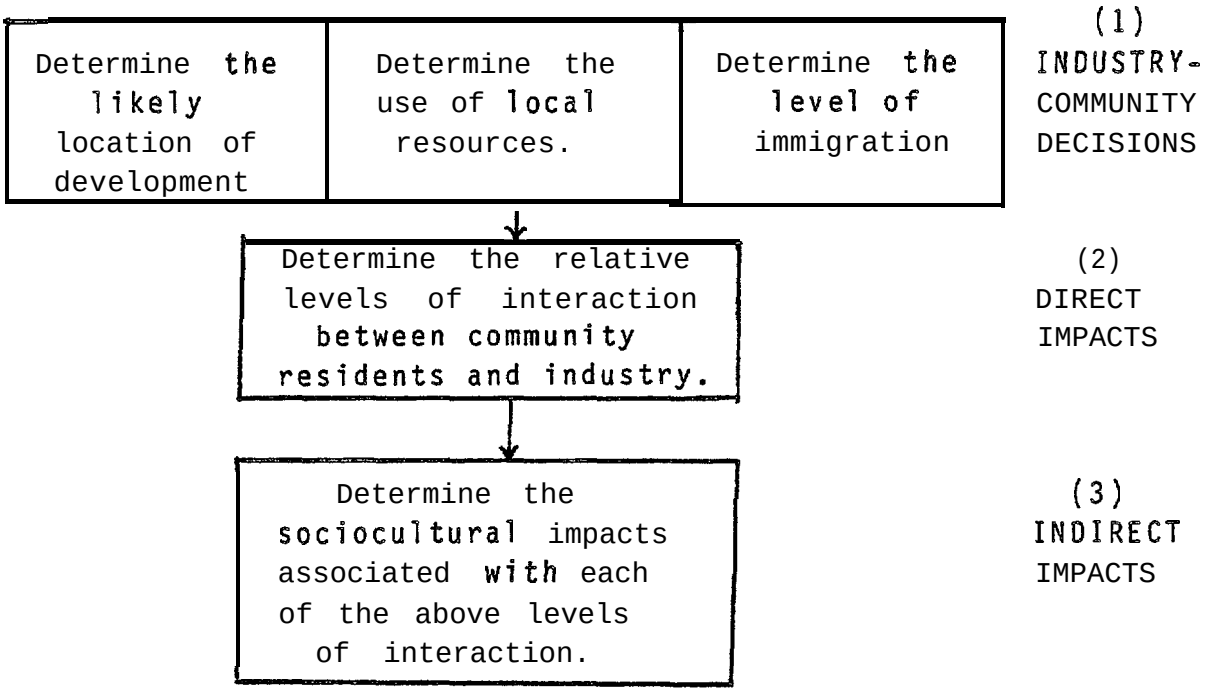
To deal with this complexity and uncertainty, a framework of systematic and consistent assumptions must be established. The framework structures the range of possible siting results for a given development level and a particular community and links the results of the siting decisions to the direct and indirect impacts of OCS development on the community.

The model is applicable to communities which are either considered to be likely sites for the development of onshore facilities or which are sufficiently accessible to such facilities to receive direct or indirect impacts. With this model, the MMS (or any other interested party) can derive a range of possible facility sites, and a list of expected community impacts for potential OCS development. This set of sites and impacts serves as a comprehensive and consistent structure for more detailed analyses in the Socio-economic Studies Program (SESP) for OCS lease sales in Alaska.

B. STRUCTURE OF THE MODEL

In its simplest form, the process of OCS development can be regarded as the following sequence of events: (1) decisions regarding the location and use of facilities, services and labor result in (2) direct impacts on a community which, in turn, lead to (3) indirect impacts. Therefore, the model consists of the three basic elements as shown in Figure 1.

FIGURE 1
THE BASIC ELEMENTS OF THE IMPACT FORECASTING MODEL



The Industry-Community Decision Element first determines both the likely scale and location of onshore facility development. Each potential site is analyzed in the light of industry requirements and preferences as well as community resources and attitudes. This element takes each type of OCS facility development and identifies both the type and level of potential use of community resources for that development. The decisions identified in this element are the likely results of negotiation between industry and community. These decisions in combination with local resources, are then related to the impacts described in the other two elements of the model.

The Direct Impact Element then combines the effects of each decision on community resource use into a table of direct impacts on the nearest community. This is done for each potential phase of OCS industry activity [exploration, development, and production).

Finally, the Indirect Impact Element identifies both the type and level of potential indirect community impacts which can be expected from past research and Alaskan conditions. Each potential indirect impact is linked systematically to a direct impact and its relative importance as determined from past research in the field.

As a result, the model forecasts both direct and indirect impacts resulting from a given level of OCS development activity for a specific community and phase of industry operation.

C. THE NEGOTIATION PROCESS

The model user must consider the different possible outcomes of the negotiation process which may occur between a community that is a potential site for an onshore service base, and an oil industry representative pursuing the development of that site. Alaskan examples of these industry-community negotiations are found in Appendix A.

Negotiation is a social process involving two or more actors who may be either individuals or groups (corporations, communities nation-states, etc.). Considerable research has been conducted on the negotiation process, principally in the areas of law (plea bargaining, out-of-court settlements of civil suits) and international relations (arms control agreements, foreign trade agreements, the joint use of international waters or outer space, etc.). The key elements affecting outcomes of negotiation involve (1) the power to control or affect resources that both groups consider valuable or necessary to meet their goals, (2) the personality characteristics of those doing the negotiation, often thought of as "negotiation skills", and (3) leadership consensus or agreement about who has the authority to negotiate.

In the case of Alaskan OCS development, there are several possible combinations of these elements for both industry and community. For example:

- A community may have strong consensus about what it wants from industry and agreement about who has the authority to deal with industry, but not have control over any resources that the industry absolutely needs in order to develop the site.

- An oil company may need certain resources the community controls, but have no authority to make its subcontractors comply with any agreements it negotiates with the community.

- A community may contain several factions with conflicting demands from industry, thus weak leadership and weak control .

While the various combinations of these elements could be systematically organized and incorporated into a model, such

factors as (1) the negotiation skills of actors, (2) the extent to which the negotiating company speaks for the various subcontractors and (3) changes in attitudes and consensus in the community that might transpire during the process cannot be easily measured or predicted. There is also the prerogative of industry to decide where it will locate and what it needs before negotiating with a community. Nevertheless, it has been possible to incorporate industry/community negotiation into the model through focusing upon four decision points, three industry characteristics and three community characteristics. These decision points, discussed more fully in the following pages are:

1) which land will be used for the facility,
2) what community infrastructure and utilities will be needed to support an OCS facility,
3) where will housing for workers be located (e.g., in camps or not),
4) what access will workers have to the community.

The characteristics of oil industry companies which affect their ability to negotiate are:

1) The openness of a company's management style and ability to communicate with the community.

2) The alternative sites that may be available to the company at similar cost.

3) The short term or long term nature of the company's interests.

Although there are many oil industry styles of management, there are also common influences on their actions and common attitudes toward certain decisions which have been built into the model. (See Appendix A for a description of the industry viewpoint). The main differences in approach to facilities decisions are related to the phase of activity (exploration, development or production). Exploration decisions are usually short term (3-5 years), whereas development and production decisions are generally long term (20-30 years).

The three characteristics of communities which will affect their ability to negotiate are:

1) Land use regulations.
2) Quality of leadership.
3) Cohesiveness of community attitudes about development.

These community characteristics must be assessed in the community itself, and their influence on the above decision points then described in the form of likely assumptions for use in the model.

The model is designed to operate quickly and efficiently once a set of key assumptions and data are specified. Initially the set of most probable assumptions will be used concerning the potential for acquiring land, sharing facilities, local hire, and the employees' use of bars and stores in the community. For the industry requirements a medium-find scenario could be used, with a full or partial service base assumption, depending on local conditions. Applying the model with these assumptions will generate a reference set of direct and indirect impacts for the community being analyzed.

1) Alternative Assumptions

Given the uncertainties in the negotiation process described above, in many cases, alternatives for some of the above assumptions (e.g., location decisions or housing decisions) are also likely to be realistic. In this circumstance, the model is designed to take alternative assumptions and rapidly produce a second or third set of direct and indirect impacts to analyze changes from the original or most probable assumptions. Alternative assumptions could be analyzed for each possible location for a full or partial service base type, or for a completely offshore support base. Alternative community actions or policy decisions can also be easily analyzed for their effects on impacts.

From the results of these additional model runs it is possible to determine the range of potential impacts and the sensitivity of these impacts to changes in the reference

assumptions about community actions, level of oil and gas found, and type of service base. This sensitivity analysis will also help to identify those actions which could have a major influence on community impacts, and therefore could be used to identify mitigation or enhancement measures.

2) Detailed Issues of Negotiation with Alaskan Examples

As mentioned above, there are four major types of issues that a community is likely to negotiate with the oil industries in relation to offshore oil and gas development: (1) location of facility, (2) development of infrastructure and utilities to support a base, (3) location of housing for workers, and (4) worker access to the community as a whole.

The location of an onshore service base in the community has several issues associated with it. The primary one is the availability of land. While the model addresses the differences in land requirements for various stages of development, the first issue is the site for a service base. The identification of land suitable for a site is the first issue that is dealt with by the oil industry, and the first that is negotiated with the community. Land use controls such as zoning powers or the presence of a coastal management plan which has been adopted by the community are the two major influences that the community has on the location decision for the facility.

In some Alaskan communities, no such land use controls exist. In others, the development of land use controls will be stimulated by the potential presence of the industry. The final control that the community can influence over the location of the facility is outright ownership. While the land ownership pattern of Alaska is clearly mixed, coastal communities are more likely to have state, federal or Native ownership of coastal lands than are other communities. Therefore, it is highly likely that in some communities the industry will be dealing with an owner which is a government entity and not necessarily sympathetic to the goals of the industry or the resident population. In this case the land ownership introduces yet another factor into the negotiation process for the potential siting of the facility in a community.

Other major locational issues have to do with the development or use of existing transportation infrastructure, particularly dock or port facilities and airports. In most of the communities that will be impacted by offshore oil and gas development, the airports are owned by the State of Alaska. Land adjacent to airports in most communities can be leased for purposes of providing a staging area for industry needs. The negotiation for access to those lands, therefore, occurs between the State of Alaska and the industry. Dock and port facilities, however, are more likely to be owned and controlled by local governments. Therefore the negotiation process for access to the port is usually with the City Council, City Manager or Mayor.

The case of' Yakutat in Appendix A gives a good illustration of how the negotiation process influences the location of a service base. First, land-use controls were exercised to zone the industry's first choice location (a cannery dock) for non-OCS use. The community then zoned for industry a site it saw was suitable for OCS use. The village corporation which owned most of the land near the second site then negotiated a contract with the oil company (ARCO) that included clauses on local employment, and limited access for rig personnel to the community. As a result, the basic character of the service base was affected by the process of the negotiation.

The importance of these factors, site location and the power of the community to influence the site, cannot be overstated. It is the control of the land and the lease agreement for the use of the land that has the potential to influence the outcome of many negotiations down the line.

Another major issue in negotiation centers on the provision of infrastructure and utilities, specifically water service, sewer service, electricity and solid waste disposal. In most rural communities, utilities are developed to minimal standards to support the existing community. When industry seeks to develop a site, it is faced with the problem of providing their needs for water, sewer, electricity and waste disposal. In many cases, these kinds of services can be negotiated with the community in a manner that has the potential to be mutually beneficial to both parties.

The control of future development of utilities, however, is

not necessarily vested in one institution. Power production may be an independent operation or it may be a cooperative venture such as Alaska village electric co-ops. Water and sewer services may be constructed by the federal public health service and operated by the local city government. Therefore, expansion of such facilities is most often not a capital improvement that the local government itself engages in and another party enters the negotiation process. Nonetheless, negotiation has, and will, occur in all communities in the areas of expansion of utility services to support the industry needs.

The third major issue that will be negotiated in the community involves the provision and location of housing for new workers. There are three basic choices for locating this housing. Housing for workers can be located on the service base, as is the case in the North Slope Borough. A second option is for worker housing to be located in the community on a random basis, as individual employees would seek housing in a community. The third option is a separate development for housing located next to or in the community, either by a private developer or the industry itself.

The major thrust of the negotiation process over the provision of housing usually has to do with the location of the housing. The Prudhoe Bay installations is a totally self-supporting enclave, and does not interact with the communities in the region. In the case of Valdez during the construction of the terminal of the pipeline, housing was an acute problem which was resolved principally through trailer courts and work camps constructed during the construction period. In the case of Yakutat, no housing was provided, and all workers were transported directly from the airport to the exploration rigs in the Gulf. In the case of the Kenai Peninsula, most housing for workers was integrated into and scattered among housing that existed for current residents, although two subdivisions were built by industry. This issue is negotiated with members of both the public and private sector as the industry pursues the fulfillment of its need for worker housing.

The fourth major issue for negotiation in any community will be employee access to the community. The range of options includes, at one extreme, no access to the community, as in the case of the Dome Petroleum facility at Tuktoyuktuk (Tuk). In Tuk the workers are transported from the airport to the service base

and cannot enter the village of Tuk. At the other extreme is complete access to the community as in the cases of the Kenai Peninsula or Valdez. (See Appendices A and I for more details).

It may also be possible to structure an arrangement that falls between the two, whereby workers have limited access to a community. For example a bus could be used to provide transportation from an isolated camp into a community to take workers to a movie or to a restaurant. The bus could then pick the workers up and take them back home at a curfew time on a Saturday night or Sunday morning.

It is most likely that if access to a community is an issue for negotiation, it will be a choice of either complete prohibition on access as in the case of Tuk, or complete access as in the case of Valdez. The experience in Tuk was that workers orginally had full access to the community, but this small native community reacted to unsocial worker behavior by changing the policy so that the workers were no longer allowed in the village. The industry cooperated with this policy shift and is enforcing it.

Thus, the major issues over which negotiations will most likely occur in a community facing potential offshore oil and gas near it are (1) issues associated with the location of facilities and/or housing and (2) issues associated with the interaction between new people coming to the community and current residents. It is most likely that these negotiations will occur with city or village councils, but individuals or other government agencies who have power based on land or utility ownership will enter negotiations in many cases.

3) Negotiations and the Model

As it is currently structured, the model only incorporates two specific influences on negotiation which can be readily identified as existing or not existing in the institutional structure of the community. These are: (1) the presence of land-use control or regulation and (2) the presence or lack of presence of a city government.

In the preparation of the model there was considerable discussion about the best way to incorporate the negotiation

process. The elements that are currently included are the most concrete realities that exist in a community and provide an indication of community control over the outcome of negotiation. There are other areas of influence that could be addressed in attempting to forecast the likely outcome of negotiation in the modeling process. However, they enter the area of subjective evaluation which is best treated by survey research, and therefore beyond the limitations of the methodology presently applied by MMS to the forecasting process.

For example, two major factors affecting the negotiation process which are not as concrete as the presence of land use regulations are: 1) the quality of the leadership in a community, and 2) the cohesiveness of the community in relation to its attitude about development. Communities that have strong leadership and are cohesive on the issues of development will be more likely to succeed in their negotiation process with industry than those without these two characteristics. These factors, however, were not incorporated into the model for the following reasons:

- the assessment of the quality of leadership is a very difficult process in the light of the limitations of the MMS constraints on forecasting methodology. If the methodology were expanded to provide for survey research whereby community attitudes about their leaders, and about their own values related to economic development, could be assessed, these attitudes could also be included in the model. However, given this limitation the study team is confined to using those indicators of attitudes which can be observed without a survey.

- attempting to determine the quality of the leadership in a community, either by asking a small number of informants "do you think that leaders are doing a good job?" or by measuring the longevity of leaders in elected office as an indicator satisfaction with leadership, were both found to be unsatisfactory.

- the relative cohesiveness of a community could be determined by the number of splinter groups that have developed around a given issue over the past several years. This would be an indirect way to assess whether the community "thinks alike" about major issues or the community is divided about major issues. Unfortunately, there appears to be no direct correlation

of number of splinter groups with cohesiveness in many Alaskan communities.

- Similarly, community feelings about its leaders could potentially be evaluated by the number of people who choose to participate in regular elections or decision-making meetings. Community support could be related to large number of persons turning out at either the polls for public elections or meetings, or elections of Council personnel. However, in this case, the model would be utilizing indicators which could be interpreted in conflicting ways relative to the possible outcome of the negotiation process.

The most reliable information that could be used to predict the outcome of a negotiation process is usually that information associated with land use controls and land ownership. The other factors concerning community leadership are much more fluid, and the public perception of them will change radically over time, but land issues are more clear and consistent in their effects on decisions.

Given this fluidity concerning important decision factors, there are two possible cases that the model user will face; cases where there is reliable information about land issues and a clear position taken by community leaders and cases where these are uncertain. In the first case, the model is better able to be predictive. In cases where the information is not reliable or not available, the model can provide only a set of alternative outcomes that may occur as a result of negotiations. In these cases, the model can be given two different assumptions about each uncertain outcome, and a set of impacts could then be forecast for each outcome. Thus, the range of uncertainty about impacts could be defined.

D. DEFINITIONS AND LIMITATIONS OF THE MODEL

The following general definitions are used in the discussion of the model.

- OCS industry = the combination of oil companies and supporting contractors which carry out OCS oil and gas exploration, development and production.

- Community = the land area and population within or immediately adjacent to the boundaries of a village, town or city.

- Impact. = a significant change in the economic, social or cultural organization of a community.

Because the purpose of the model is to provide a general framework for further study rather than a detailed analysis, it has certain limitations which the user must recognize, including:

1) The model does not require detailed primary research and does not provide precise estimates of changes in the community. Instead, these changes are identified in terms of general levels of interaction.

2) The model does not determine the optimal location within a region for onshore facilities. The locations to be analyzed are provided as inputs from previous MMS or industry studies.

3) The model has been generalized to cover all development phases (exploration, development and production), the possible levels of oil discoveries and the wide range of community characteristics exhibited by Alaskan coastal communities. This level of generality makes the model more widely applicable, but less specific as far as some unique features of communities are concerned.

4) The links between direct and indirect impacts are derived from a wide range of recent impact research, and adapted to the Alaskan environment. These linkages should be considered as working hypotheses based on the best available knowledge, to be updated as more information is collected.

E. USE OF THE MODEL

The model is designed to be applied to each OCS development phase (exploration, development and production) at alternative levels of oil and gas discovery, and with a wide range of community characteristics. In order to use the model, data must be supplied in each of these categories.

The analysis begins with the identification of potential onshore sites of a given lease area. This leads to the identification of a community (or communities) that could potentially be affected by OCS development needs. Each community can then be examined in the model by identifying its key characteristics and attitudes. These data are found primarily in the MMS Baseline Studies, but must be supplemented in some instances by interviews with knowledgeable people in the community.

Next, each phase of development is considered in conjunction with a level of activity. The requirements of each phase differ greatly in terms of direct labor involved and potential use of existing community land and facilities. Exploration is generally much less demanding than the development or production phase. If no economic amounts of oil and gas are discovered, exploration is the only phase (as happened in Yakutat).

The level of potential development and production requirements are related to the amount of oil and gas discovered. This information is obtained from MMS estimates of high, median and low-potential discoveries as documented in the MMS studies of development alternatives for each lease sale area. These alternative levels of activity are then converted into requirements for land, labor and facility use which are provided as inputs to the model. (The step-by-step use of these inputs in the model is described in detail in Section III).

As the model is applied to each phase and level of activity for a given community, some uncertainties will be discovered in possible outcomes of the industry-community decision process. This uncertainty is treated in the model by identifying the range of possible outcomes associated with the uncertainty, and determining the resulting range of direct and indirect impacts in each case. In particular, alternative assumptions about

community attitudes and policies about land use and development can be examined for their siting and impact implications.

Finally, the list of direct and indirect impacts identified by the model in each case can serve as a checklist for the more detailed studies of socio-economic and socio-cultural effects undertaken by the MMS (or other interested parties). In some cases, relative levels of impacts can be predicted through the model. In other cases only the existence of impacts can be predicted by the model.

In either case the predicted impacts can serve as a guide for developing mitigation measures to increase the positive effects of OCS development and/or to decrease its negative effects. This information may be useful for industry and community decision-makers as planners in dealing with future OCS development choices.

PART TWO:

PRESENTATION OF MODEL

A. DETAILED MODEL FLOW AND INPUTS

Figure 2 is a flow diagram showing the detailed steps to be taken in applying the model. The actual operation of the model begins with information obtained from (1) USGS Reports, (2) SESP Reports, (3) SCIMP model output, (4) Other Secondary Data Sources, and (5) Field Work. The operation employs the use of a literature guide and six easy-to-follow "worksheets" which direct the user to appropriate computer analysis reports or field investigations.

The field work is aided by a Field Guide (see Appendix B) which is used during a very brief visit (3-4 days) to the community under study. Some data gathered from appropriate reports and from field work are quantitatively analyzed through a modified version of the OCS SCIMP model, and then entered on worksheets for impact analysis.

Table 1 presents a list of the types of information needed as inputs to the model and the data sources for each. A Literature Guide is included with the project worksheets, which specifies the format of specific data from SESP reports. The other data sources listed in this table would serve as background material for the model user.

FIGURE 2

BASIC PROCEDURES OF IMPACT ANALYSIS FOR A PARTICULAR PHASE & LEVEL OF FIND

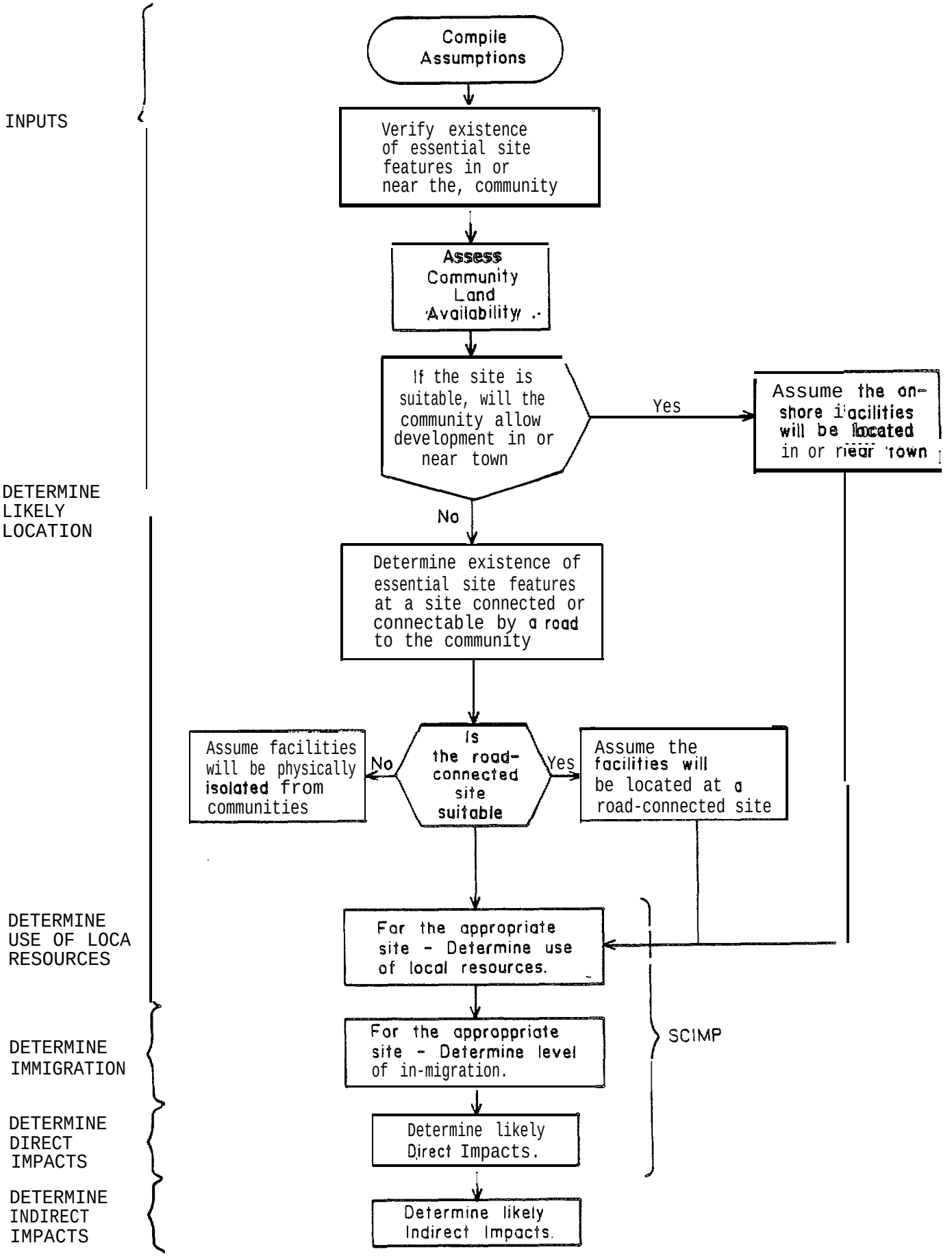


TABLE 1

ASSUMPTIONS FOR MODEL BY DATA SOURCE

	USGS REPORTS	SESP REPORTS	OTHER SEC. DATA SOURCES	FIELD WORK
A. OCS FACILITY NEEDS AVAILABILITY				
1. Expected reserve estimates, oil and gas by scenario.	X			
2. OCS facility requirements per barrel of oil and gas:	X	X		
Harbor facilities (channel, depth, berth)	X	X		
Airstrip facilities (length of runway)				
Shorebase land area (areas)	X	X		
Waterbase, telephone, fire, sewer	X	X		
3. Physical current and expected availability of community land, facilities and services.	X	X	X	X
4. Community attitudes towards OCS use of community land, services facilities and stores.		X		X
5. Company (industry) attitudes toward OCS use of community facilities.				X
B. OCS EMPLOYEES, EMPLOYEE FACILITY NEEDS, AVAILABILITY				
1. OCS employment requirements, per barrel of oil and gas, by phase, residency (local vs. non-local).	X	X		

	USGS REPORTS	SESP REPORTS	OTHER SEC. DATA SOURCES	FIELD WORK
2. OCS employee needs, per employee; by phase, enclave type:	X	X		
Housing (by type)	X	X		
Bars and stores	X	x		
Utilities and Services	x	x		
3. Physical availability of OCS employee needs in community.		x	X	x
4. Community attitudes towards OCS employee use of community facilities.		x	X	x
C. POPULATION AND LABOR FORCE CHARACTERISTICS				
1. Local population		x	X	x
2. Local labor force, by categories unemployed, employment, discouraged.		x	X	x
3. Labor force participation rates.		x	X	x
4. Indirect employment multipliers by phase, enclave type.		x	X	x
5. Population dependency ratios.		x	X	x

B. MODEL COMPONENTS, LOGIC AND TERMS

This section provides a discussion of the analytic logic and technical terms associated with each of the three major components of the model: Industry-Community Decisions, Direct Impacts, and Indirect Impacts. The following discussion also describes the relations between the three components.

1) Industry-Community Decisions. This component examines the industry needs, the location of a service base, and community resources and attitudes, in order to determine the use of local resources, services and labor, and the level of industry-community interaction. First critical requirements are identified and analyzed in relation to the available local resources. It then considers the likely community policy toward the location of onshore developments, housing of workers in the community, and industry use of community utilities and services. The results specify both the likely location of development and the level of interaction which the industrial activities or facilities would have with the community.

The following steps and decision points are addressed in this component:

1a. Compile Assumptions

The first step in this process is to compile assumptions on OCS development from information supplied by MMS.

- For the exploration phase, this includes assumptions on the level of activity the offshore facilities and the communities which are close enough to the field to be likely sites for onshore developments.

- For the development phase", assumptions on the level of production, the number of drilling platforms and whether an LNG plant is a possibility are necessary inputs.

- The production phase analysis uses the results of the development phase as inputs. These assumptions are then used to determine industry requirements for employment, and population impacts.

1b. Verify Existence of Essential Site Features Near the Community

The essential site features include adequate land and deep harbor. The amount of land and the necessary depth of the harbor vary according to the phase.

- For the exploration phase, the service base is the only development under consideration. This requires adequate depth for supply boats and enough land near the docks for storage and staging area.

- In the development phase, the land and harbor requirements of oil terminals and LNG plants are evaluated.

- Because siting decisions and construction of oil terminals and LNG plants occur during the development phase, the production phase analysis uses the results of the development phase site analysis as inputs.

1c. Assess Community Land Availability

If there is land and deep harbor available, in or near the community, the next step is to determine whether the land could be used by industry. This is done by determining who controls, or is likely to control, land use in the community. If there are currently no land-use regulations and if none are likely to be legislated, the user inquires of the landowner whether the land would be available to industry. If the town council controls land-use regulations, the user asks the council members about the likelihood of allowing industry to develop facilities. This process is discussed in detail in the Field Guide (Appendix B).

1d. If the Site is Suitable , Will the Community Allow the Development In or Near Town?

If there is adequate land for the facilities and if the community is not opposed to having the development nearby or has little or no control over land use, it is assumed that the industry will locate near town. This is due to the lower costs

associated with the presence of facilities, such as airports, docks and utilities, higher employee satisfaction when personnel have access to a town and the presence of less expensive unskilled labor (i.e., no transportation costs).

1e. Determine the Existence of Essential Site Features at a Site Connected by a Road to the Community

If the community is not adequate, or if community policies and controls are opposed to development, it is assumed the next choice would be a site connected or connectable by road to a community. At such a location, the industry would still be likely to have the advantages of a nearby airport and some community facilities (if the community will allow use). The harbor and land available are evaluated for the specific needs of each phase.

1f. Is the Road-Connected Site Adequate?

If the road-connected site has adequate land and harbor capacity, the road-connected site is evaluated further. If not, it is assumed that the facility will be located elsewhere and be relatively isolated from the community. If another community exists close to the field, however, the process can be repeated for that community. However, it should be noted that if the isolated site has a strong potential for being connected by road, it is evaluated as a road-connected site.

1g. Determine Immigration and Direct Use of Local Resources

Once the likely location is ascertained, immigration and the use of local resources are examined. This step considers the following: 1) industry use of local contractors and suppliers; 2) use of local labor; 3) use of services, facilities and utilities and 4) immigration of new community residents. The OCS SCIMP computer model is used at this point.

1h. Relation to Direct Impacts

Inmigration and the use of all types of local resources

determine the type of, and level of direct impacts the community is likely to sustain. The relationship between the industry-community component and the direct impact component is as follows:

- The use of local contractors or industrial support services has direct impacts both on the local economy and on the services available to the community.

- The size and skill levels of the required industry workforce influence both the amount of local labor used and number of people who will migrate to the community in search of employment.

- Construction of service base and production facilities affects land use patterns and the local tax base.

- Industry use or construction of transport facilities affects land use patterns, the local tax base and the degree of congestion of existing facilities.

- Industry use of local police, fire and medical services affects the quality of the service.

- If the industry uses or constructs utilities, it will affect the surplus capacity of the facilities.

- The housing and recreation policies of the community influence the number of newcomers who will reside in the community as a result of OCS development.

2) Direct Impact Component. This component converts the output of the Industry-Community Analysis into a table of direct impacts of OCS development. These, in turn, are used to determine the indirect impacts which the community is likely to experience as a result of OCS development.

2a. Definitions

Direct Impacts are defined in the model to be the direct consequence of OCS development activity on a community. For example, purchases of supplies in the town and use of community

services by the industry are classified as direct effects.

Also included with direct effects in the model are: 1) immigration of new residents; 2) use of community services, facilities and stores by OCS industry employees living in camps; and 3) use of local hunting and fishing areas by newcomers. While these impacts are not actually direct effects, they are closely linked to OCS development and lead to many indirect impacts.

As shown in Table 2, Direct Impacts are determined in the following categories: 1) the local economy; 2) the local labor force; 3) land-use patterns; 4) transport facilities; 5) utilities; 6) community services; 7) the tax base; and 8) the presence of outsiders. The categories are defined as follows:

- Direct impacts on the local economy involve both industry purchases of supplies and use of local contractors.

- Effects on the local labor force are due to industry use of local labor.

- Direct impacts on land use patterns involve competition between industry and the community for land and incompatible uses of land.

- The impacts on utilities and transport facilities involve possible congestion, strains on capacity and any new or expanded facilities.

- Industry effects on community services involve the shared use of police, fire and medical services. These are the only services likely to be used directly by industry. (Othe services will be used by personnel).

- The consequence s on the tax base involve possible increases in the community tax and/or increases in the potential borough tax base if a facility is located outside the community.

- A major impact of OCS development is an increase in the presence of newcomers and their interaction with predevelopment residents. This category, as discussed

TABLE 2

DIRECT IMPACTS OF OCS DEVELOPMENT

Level of nteractior	Local Economy	Local Labor Force	Land Use Patterns	Transportation Facilities	Public Utilities (Water, Telephone, Power, Sewer)
(A) MINIMAL INTERACTION	1) Industry uses fe local suppliers cent ractors	2) Little use of local labor relative to the local work force	3) Few land use conflicts	4) Increased use of some or all transportation facilities but no serious congestion	5) Increased use of some or all community utilities
(B) MODERATE INTERATION	1) Industry uses some local suppliers and contractors	2) Moderate use of local labor relative to the local work force	3) Some land use conflicts	4) One to three transportatic facilities are congested due to shared use	5) Two or three communi ty utilities are at or over capacity due to sharing
(C) MAXIMUM INTERACTION	1) Industry uses many local suppliers and contractors	2) Significant use of local labor relative to the local work force	3) Many land use conflicts	4) All transportation facilities are congested due to shared use	5) Four or five community utilities are at or over capacity due to sharing

TABLE 2 CONTINUED

DIRECT IMPACTS OF OCS DEVELOPMENT

Level of Interaction	Community Services (Police, Fire, and Medical)	Local/Regional Tax Base	Presence of Newcomers
(A) MINIMUM INTERACTION	6) Increased use of some or all services but none are over capacity	7) No increase in community tax base 8) Little increase in potential tax base outside community	9) Low immigration of new residents 10) Little use of community services by employees living in camps 11) Little use of bars and stores by employees living in camps 12) Little use of local hunting and fishing areas by newcomers
B) MODERATE INTERACTION	6) One or two services are at or over capacity due to sharing	7) Some increase in community tax base 8) Some increase in potential tax base outside community	9) Moderate immigration of new residents 10) Moderate use of community services by employees living in camps 11) Moderate use of bars and stores by employees living in camps 12) Moderate use of local hunting and fishing areas by newcomers
(C) MAXIMUM INTERACTION	6) Three services are at or over capacity due to sharing	7) Significant increase in community tax base 8) Significant increase in potential tax base outside community	9) Significant immigration of new residents 10) Significant use of community services by employees living in camps 11) Significant use of bars and stores by employees living in camps 12) Significant use of local hunting and fishing areas by newcomers

earlier, includes impacts which are actually closely linked to other direct impacts and which lead to many indirect impacts. The impacts in this model that fall under the presence of newcomers are: 1) immigration of new residents; 2) use of community services and facilities by employees living in enclaves; 3) use of local bars and stores by employees living in enclaves; and 4) use of local hunting and fishing areas by newcomers.

2b. Levels of Interaction

Direct impacts are identified in the worksheets according to their interaction, or level of effect on the community. Three qualitative levels of interaction (minimum, moderate and maximum) are identified for each impact. For example, a minimum level of interaction corresponds to a relatively isolated facility which has little contact with the community, employs few local personnel and/or contributes very little to the local tax base. In the case of maximum interaction, the industry would have extensive contact with the community, employ many local people and/or contribute substantially to the local tax base. An intermediate level of interaction was identified for each category between the minimum and maximum levels.

As shown in Table 2, each impact is given a code which specifies both its impact category and its level of interaction. For example, impact A1 indicates that the industry uses few local contractors and suppliers, B1 indicates that some suppliers and contractors are used and C1 indicates that many suppliers and contractors are used.

The output of the direct impact analysis is a table of direct impacts on a community for each phase of OCS development. This is compiled by checking off the impacts according to level of interaction on the worksheets. This results in an impact table for each phase of OCS development and for each set of alternative assumptions about site development.

3) The Indirect Impact Component. The model converts the table of direct impacts to a categorical list of probable indirect impacts for a particular community at a particular phase

of development. An indirect impact is defined here as significant change in the economic, social or cultural organization of a community, that results from one or more of the direct impacts of OCS activity on the local economy, labor force, community facilities and services, tax base, and local population.

For example, a change in population composition (age, sex, race) is a result of the immigration of new residents to the community as a consequence of OCS activity. As another example, the need for more planning and impact studies is an indirect impact that results from a number of direct impacts: sharing of police, fire and medical services; increase in community tax base; increase in tax base outside community; and immigration of residents.

3a. Procedure for Determining Indirect Impacts

The science of social impact assessment is not so advanced that all the cause and effect relationships between direct and indirect impacts have been established. Nevertheless, researchers have shown a wide range of general associations between the levels of interaction (direct impacts) and the social, cultural and economic changes that occur in a community (indirect impacts).

The model provides 135 potential impacts that have been gleaned from the literature and Alaskan field work. These indirect impacts have been organized by category and by the thirty-six types of direct impacts codified through the model procedures described above. Once the direct impacts for a given case are determined in the initial steps of the model, the user can identify which of the indirect impacts are applicable for that case and its related direct impacts. In this way, the potential changes in the economic, cultural or social organization of a particular community which might be effected by a particular level of OCS activity can be identified in a systematic and comprehensive fashion.

3b. Categories of Indirect Impacts

Appendix C, "Indirect Impacts of Industrial Development", provides a list of the 135 separate impacts that potentially

result from different levels and phase of OCS activity. These indirect impacts are organized into three categories: social, cultural, and economic impacts.

These categories are defined in the model as:

Social Impacts; changes occuring in size, composition and distribution of population; changes in the administration and fiscal resources of local government; changes that occur in the organization and functions of health care, schools, churches, public safety, housing and local business.

Cultural Impacts; changes occurring in subsistence (non-market economy); social organization; perception of the quality of life, and communication.

Economic Impacts; changes in employment income; structure and function of the local economy; and real estate.

3a. Relation Between Indirect and Direct Impacts

Each of the indirect impacts is associated with one or more direct impacts (see Appendix D). A detailed explanation of the linkages between direct and indirect impacts was presented in Technical Memorandum EN-4. However, for the purpose of an example, a discussion of the indirect impacts on schools, and their correlation with certain direct impacts, is presented in Appendix E.

The determination of indirect impacts completes the third and last component of the impact model. The model then has produced a) a set of community and OCS decisions on the potential use of community resources for onshore development, b) the resulting direct impacts and c) the eventual indirect impacts.

C. MODEL OUTPUTS

The output of the model consists of four sets of data:

- the filled in worksheets and resulting key decisions,
- the direct impacts Identified in Table 2,
- the potential indirect impacts Identified in Appendix D.

The model outputs should also contain a specific list of the key assumptions needed to fill in the worksheets, along with areas of uncertainty noted for alternate runs. Two of the worksheets also specify the data needed for the SCIMP model run, as they are filled in (see Part III for details).

Next, Table 2 is filled out by checking off the level of interaction in each impact category as it is identified in the worksheets. Finally, each section of Appendix D that corresponds to the direct impacts which were checked is then attached to the direct impact table.

The form of the model output is then:

1) A cover sheet specifying key assumptions, the site and the phase analyzed and areas of uncertainty for future runs.

2) A summary of each completed worksheet and the associated SCIMP output..

3) A profile of the direct impacts noted for each site and phase.

4) Copies of the corresponding indirect impact lists from Appendix D.

See Appendix G for examples of these outputs for the cases of Nome and Unalaska/Dutch Harbor.

PART THREE:

APPLICATION OF THE MODEL

In this section the step-by-step application of the model is presented. The procedures have been streamlined as much as possible without risking a lack of clarity. Once the user has applied the model in a working situation it is likely that further shortcuts through the steps will be identified.

It is necessary that the model be run for each phase of OCS development (exploration, development and production) although it should be pointed out that our tests of the model indicate that the data differ little between the development and production phases.

A. BASIC PROCEDURES

Step 1: The Literature Search

First it is necessary to collect and summarize data from various reports which are used as inputs to the model. The Literature Guide (Appendix E) asks the questions that must be answered from various reports and directs the user to the appropriate reports. The questions pertain to industry requirements and to community resources and facilities.

Task 1: Determine which site or sites, in or near the community under study, meet industry requirements for an onshore base. The MMS Petroleum Scenario Report for the area is studied and one or more sites are identified as potential locations for full or partial onshore bases.

Task 2: Obtain current labor force data for the community under analysis from the MMS Local Socioeconomic Systems Analysis Study.

Task 3: Obtain industry labor force requirements from the applicable MMS Petroleum Development Scenario Report.

Task 4: Determine industry need for housing in the peak year of each development phase. Source: MMS Socioeconomic System Report.

Task 5: Determine the following estimates about utilities (water, sewer, electricity, solid waste and telephone) and transportation facilities: present capacity, planned expansion, and estimated demand with direct OCS industry use (camps plus service base or plant use). Sources: MMS Socioeconomic Systems Analysis Report (baseline utility data), MMS Petroleum Development Scenario Report (direct OCS industry use), and MMS Transportation Systems Analysis Report, (transportation impacts).

Step 2: The Field Work

Once the available information has been obtained from the literature and the user is familiar with the area to which the model is being applied, it is necessary to visit the community to obtain other data. A Field Guide (see Appendix B) is used to prepare the user to enter the field, to identify key informants, and to enter data gathered on the field visit.

Step 3: The Worksheets

After returning from the field, information from the Literature Guide and the Field Guide is summarized and entered on the appropriate worksheets. A set of six worksheets (Appendix E) is used to determine direct impacts associated with:

1) Location on Onshore Base
2) Employment
3) Immigration
4) Utilities Use and Demand
5) Use of Services and Community Businesses
6) Transportation Capacity and Congestion

These worksheets lead the user from information gathered in Steps 1 and 2 through a short analysis which identifies the level of each type of direct impact in Table 2.

Table 3 lists the worksheet on which each direct impact is identified. Worksheets 2 and 3 also produce estimates of community characteristics for each site which are used as input to the MMS SCIMP model in Step 4. Output data from the SCIMP model is then used in the impact analysis in the remaining worksheets.

Step 4: SCIMP Computer Run

As part of the impact determination on Worksheets 2-6 a SCIMP run is used to forecast employment and population changes and related demand for utilities and services by community residents. The input to SCIMP for each run are found in Worksheets 1, 2 and 3, as well as from other OCS reports. The SCIMP model then generates five types of output which are used as part of the worksheet analysis in the following steps to determine direct impacts. These are:

- Percent local labor force taking OCS jobs.
- Maximum camp population.
- Maximum percent increase in local resident (non-camp) population.
- Utility demand with OCS inmigration (water, sewer, electricity, solid waste, and telephone).
- Increase in air passenger trip demand due to OCS activities.

A flow diagram of the SCIMP model showing each input and output used in the worksheets is given in Figure 3.

Step 5: Determine Direct Impacts

Each worksheet contains instructions for analyzing the field data and the SCIMP outputs to determine the type and level of each direct impact. Table 3 shows where each impact type is located on the worksheets.

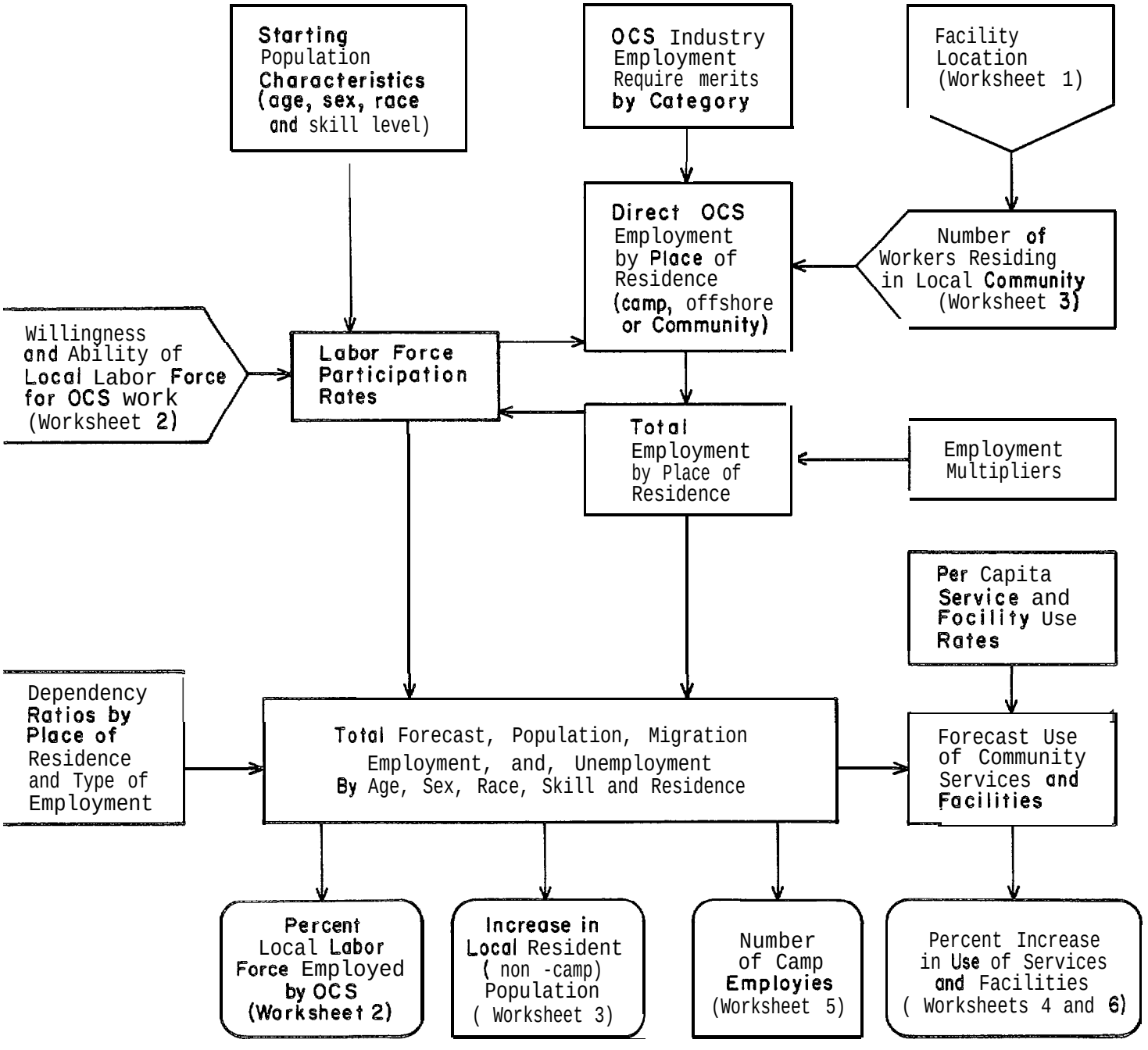
TABLE 3

LOCATION OF DIRECT IMPACTS ON WORKSHEETS

Direct Impact Code	Worksheet
A1	1: Location
A2	2: Employment
A3	1: Location
A4	6: Transportation
A5	4: Utilities
A6	3: Immigration
A7	1: Location
A8	1: Location
A9	3: Immigration
A10	5: Use of Services
A11	5: Use of Services
A12	3: Immigration
B1	1: Location
B2	2: Employment
B3	1: Location
B4	6: Transportation
B5	4: Utilities
B6	3: Immigration
B7	1: Location
B8	1: Location
B9	3: Immigration
B10	5: Use of Services
B11	5: Use of Services
B12	5: Use of Services
C1	1: Location
C2	2: Employment
C3	1: Location
C4	6: Transportation
C5	4: Utilities
C6	3: Immigration
C7	1: Location
C8	1: Location
C9	3: Immigration
C10	5: Use of Services
C11	5: Use of Services
C12	5: Use of Services

FIGURE 3

SCIMP Model Flow Diagram
with Input and Output to Worksheets



As shown in Table 2, direct. impacts are specified in terms of broad levels impacts or values, i.e., high, medium, low; few, some, many, etc. In cases where percentages are used, specific ranges of values for each impact level have been provided on the worksheets. (It should be noted that these range limits are not known precisely from past research in many cases. The model should be flexible enough to allow these cut-off points to be determined empirically as experience with the model grows and actual examples of OCS development occur in Alaska).

As each direct impact is identified it is checked off on a copy of Table 2 attached to the worksheet. This table will serve as a record of all direct impacts, and a means of verifying that all types of impacts have been examined.

Step 6: Determine Potential Indirect* Impacts

At this point the user consults the document "Indirect Impacts Associated with Each Direct Impact" (Appendix D of this report) to identify potential socio-economic and cultural impacts that might be expected to occur for the case and site being analyzed. Each direct impact determined in Step 5 is traced in this appendix to a set of indirect impacts*, which are then listed in a table form for each run of the model. If two impacts of the same type but different levels are identified, the highest level should be used.

The final output category is then a systematic list of indirect impacts by type and, in some cases, by level of impact. This output is then combined with the direct impact list, and prior site selection decisions on which they are based, to document each run of the model.

*It is suggested that this process be computerized for cases of OCS impact analysis use.

SUMMARY

At the end of Step 6 the user has completed a run of the model for one phase of OCS industry activity and one set of assumptions. Steps 3, 5 and 6 must be repeated for each phase of industry activity (exploration, development and production), although many worksheet inputs will be the same. The literature search, field work and SCIMP run, of course, are only done once since all three phases can be included in the work for these tasks. Changes in assumptions may require a new SCIMP run (Step 4), as well as Steps 3, 5 and 6.

The final product of the model is the identification of direct and indirect impacts. Again, it should be recognized that the associated indirect impacts have been gleaned from a wide but mixed body of literature on the impacts of energy development on small communities and applied to the Alaskan context. There is not universal agreement in the research community that all these impacts occur in all cases or under what specific conditions they will occur. Nevertheless, the indirect impacts listed in this report have been observed by researchers and related to the various direct impacts specified in the model. They can and should be treated as a rather inclusive list of potential socio-economic and cultural changes that might be expected to occur given a specified level of offshore development, near a specified community with its particular characteristics, and with a particular type of onshore industrial presence and interaction with that community.

Sample applications of the model for Nome and Unalaska are contained in Appendix G.

APPENDICES A-I

APPENDIX A

ALASKAN EXAMPLES OF INDUSTRY-COMMUNITY NEGOTIATIONS

APPENDIX A

Alaskan Examples of Industry-Community Negotiations

1. Community Viewpoint

In Alaska there are three examples of local governments which have actually engaged in the negotiation process with OCS industry representatives. These examples are Yakutat, Valdez and, to a lesser extent, the North Slope Borough. A major element that influenced all three negotiations was the presence of leadership in each community that had the ability to speak for the community and to express the interests of the community in future development and its possible consequences.

The North Slope case has limited use for this analysis, as it occurred first as an enclave separated by long distances from any community. Once this enclave was established, however, it become a basis for the creation of a Borough government. The new government negotiated a tax base and then placed certain demands on the oil companies to finance local capital improvements throughout the Borough. The Borough had a strong mayor and was able to negotiate successfully (although several tax issues are still in court).

The case of Yakutat, gives a better illustration of how the negotiation process influenced the location of a service base, industry employment practices, and access to the community by oil industry employees.

Originally the industry purchased an old cannery located very centrally in the community for the purposes of using that facility and its adjacent dock as the primary staging area for the service base. When this negotiation became known to city officials, they proceeded to zone the cannery in such a manner that it could not be used for industrial purposes. Land use control was exercised a second time when the area where the city government desired the industry to locate was zoned for industrial purposes. Land ownership then came into play as the village corporation, with the support of the State of Alaska, indicated a land swap that resulted in the village corporation's controlling the land where the government wanted the industrial site.

It was at this point that the industry found itself negotiating with a, new land owner, the village corporation, who was fully in communication with the city government as far as the future goals of the community were concerned. The village corporation utilized its power as land owner to negotiate several elements into the lease agreement with the oil industry. The lease agreement provided not only for the use of the land, but also stipulations for hiring of local people in relation to the development of the service base, prohibitions on employee access to the community, prohibitions on firearms and alcohol for

workers while in the community, and the development of an independent power source for the service base which would serve the community as a whole upon the completion of the development period.

Thus, the negotiation over location of the facility conducted with the village corporation and the support of the city government influenced not only the site itself but all other major areas affecting interaction between the community and the development. As a result, the basic character of the enclave was affected by the process of the negotiation.

In the community of Yakutat, in 1976, when the offshore oil and gas sale was planned for the Gulf of Alaska, the residents were unanimous in their concern about potential environmental impact associated with oil development. Therefore, the leadership of that community was able to take a very strong and united stand in an effort to control any potential environmental impacts that might occur as a result of oil and gas development.

In addition, the community, with a population of 400 people, was concerned about being inundated by large numbers of new persons coming to the village. It was a basic desire of the Native persons who worked in Yakutat to not become a racial minority within their community. Therefore, when the leadership of the community sat down with representatives of the various oil companies, they could be very clear on the fact that they were not interested in having many new workers coming into the community and residing there.

Achieving consensus on the major points, such as residence of employees however, does not necessarily guarantee that negotiations to influence immigration will be successful from the point of view of the community. A second major element of negotiation has to do with the power of the community to actually influence the outcome of the negotiation. In the case of Yakutat, that power rested in control over land. In most communities where negotiations may occur, either the ownership or the control over land use will be the primary tool by which the community will be able to successfully negotiate its point of view.

Another example of this power is seen in Valdez, where the city government had land use controls and, therefore, was able to determine the location of the major tank farm. It also had the ability to participate in the development of the dock facilities through revenue bonds sold by the city in support of construction of the industry's dock. In this case, the community's interest was to actively encourage the development of the OCS industry in the community, and, therefore, the city utilized its governmental policy to provide transportation infrastructure for the development of that industry in the community.

As shown in the Valdez case, negotiations can work either as an incentive for industry to establish in the community,

should that be the will of the residents, or as a tool for mitigating impacts that the community chooses not to experience should the development occur. In either case, it is the intrinsic power of the institutions within that setting that will determine whether or not the interests of the community are served through the negotiation process.

Thus it can be seen that there are three major community characteristics that influence this negotiation process: (1) The presence of an identifiable leadership in the community which has the ability to speak in behalf of the community, (2) The relative cohesiveness of community attitudes about the future development of the community, and (3) The powers of institutions within that community to successfully influence the negotiations in the manner that best serves the community interest. These characteristics will influence negotiation between the community and any kind of development.

2. Industry Viewpoint

The oil and gas industry is composed of many companies, each with a different management philosophy and style. The major actors in community-industry negotiations will be large oil companies, but these companies have only partial control over their subcontractors (construction firms, drilling firms, supply boat operators, etc.). Therefore, they can only speak for their subcontractors to a limited extent on issues that affect the community, unless specific clauses on these issues are included in their subcontracts.

Despite this diversity, certain positions are common among oil industry representatives due to the fact that they are primarily in the business to make a profit, both short and long term. This means that a company will try to keep its costs as low as possible in accomplishing its goals. It will also try to maintain good standing in a community, although some companies are much more active then others in this area.

In the case of facility siting, there are very large differences in the eyes of the oil companies between oil exploration, and the actual development of a field after it is found. During exploration a company will play "poor boy". That is, it will try to use existing facilities as much as possible and keep investment to a minimum. This allows them to move out if no commercial oil or gas is found. Exploration decisions are based on a 3-5 year time horizon.

Yakutat is a case in point. ARCO wanted to use the existing cannery dock and storage area, and convert it to a service base. They were unable to do this, so they built a dock where permits had already been obtained. They then used the abandoned Coast Guard station as temporary housing for transients. When no oil was found, they closed down their service base operations in Yakutat.

Even in the exploration phase, of course, physical needs are the first determinants of the site. Yakutat had an acceptable airfield, and deep enough water at dockside for the service boats. Without these physical features ARCO would not have looked there for a site. They would even consider using a good airport in one community and a good port in another if necessary (e. g., Nome and Dutch Harbor for the Norton Sound area).

In the development phase of an oil field the oil companies will take a very different approach. They will identify the location for a terminal or LNG plant that best meets their needs and then build new facilities, if necessary, to support it. They will make a choice between comparable sites the same distance from the field and choose the one that offers the lowest costs, and least potential time delays. However, there are usually only one or two suitable sites available.

In the development and production phase, a company will use community facilities (as in Kenai) or build its own (as in Prudhoe). They will also finance housing construction if no suitable housing is available (as in Kenai in the 1950's). Most oil companies will encourage their employees to become involved with the community and become "good citizens" during these phases of development, as they are there for the long term.

Since time is money in this phase, a company will "go all out" to provide whatever is needed to avoid delays. This means that it will build its own facilities rather than wait for a community to provide them, and it will import workers if a training program will take too long. The time horizon for decisions is 20-30 years in this phase, however, so longer-term arrangements can be made between industry and community, if they do not hold up the process in the short run.

With respect to policy decision s about local resident employees, or allowing employee use of bars and stores, the companies can be very flexible. Their preference is to interfere as little as possible with employee choice of what they do with their off-time. However, if is it important to a community to have the town off bounds, the oil industry will comply (as ARCO in Yakutat or Dome in Tuktoyuktuk).[1]

Most oil companies will encourage local hiring in the development and production stage. They will not run a special

[1] However, they will not be able to control suppliers and others who are not under contract. These persons will" come to town in any case during a boom period.

training program usually, but will look for local people with some skills and education. Once employees are hired they have access to company training programs.

Finally, some oil companies are willing to support a joint utility with a community, but they will not usually manage such a utility for a community. This is not their business. Legal liability considerations a-rid common carrier regulations reinforce this position.

In summary, oil companies will look for the most favorable site, physically, and then choose their lowest cost alternative for using that site, or the next most favorable site. They will "poor boy" the exploration phase, by using available facilities where they can, and they will move out if no oil is found. In the development and production phases, however, the decisions are made with a 20-30 year time horizon for much larger investments. Location and policy decisions will be made in light of a long-term commitment.

APPENDIX B

FIELD GUIDE

FIELD GUIDE - ENCLAVE MODEL

Introduction

The purpose of this guide is to assist the field worker who travels to a community to organize his/her energy and notes so that your time is used most efficiently and all the data required for the model is gathered. This guide assumes that you have never been to a given community previously. However, it is assumed that you are a bright articulate person with good communication skills and that you hold positive feelings about the assignment! (OK you don't have to be cheerful!)

Before one goes to the field certain steps must be accomplished in order to familiarize the worker with the community and the region. The more knowledge the worker has, the easier the field experience will be. Therefore, before traveling the field worker must:

1) Read and be familiar with the socio-economic systems analysis.

2) Identify the major organizations in the community and who the people are who lead them. Specifically identify:

a) **Local** Government. - Who is the mayor? Who is the City Manager? How many members are on the City Council? What are the powers of the city? Who runs the utilities? What kind of school district is the community in? (REAA - which one?, city operated?, who is the superintendent?) The major source of this information is the State Department of Community and Regional Affairs publication, Directory of Local Government Officials which is revised annually by the State Division of Local Government Assistance. If you know who is running what, you can ask to see him/her by name and will have some knowledge of their sphere of influence in the community.

b) **Native Organizations** -

1) From a land claims map or the Alaska Federation of Natives identify which regional corporation the community is associated with. Who is the President and/or land manager of the regional corporation? Where are their offices located? (Anchorage?/village?)

2) Regional non-profit corporation. Which non-profit corporation serves the community? Who is the President,? Where is the office located?

3) Village corporation. Most villages in Alaska have a profit village corporation. What is the name of the corporation? Who is the President and/or land manager? Where is the office located?

All names and locations of these organizations are available at the Alaska Federation of Natives Office in Anchorage.

c) Employment - Where is the closest State Department of Labor employment office located? (in community, at a regional center, in Anchorage or Fairbanks?) Source - State Department of Labor.

d) Health - Who provides health care in the community? (State Department H&SS support health aides and clinics in small villages). Where is the closest hospital located? (Check with Us. Public Health Service. There are public hospitals in Barrow, Kotzebue, Bethel, etc. and a private non-profit hospital in Nome).

Again, the major purpose of "advance work" is to know where the people you want to interview are located and who they are.

Having armed yourself with all possible information about the community you are ready to embark on "field-work"! Personal preparations should include packing comfortable and casual clothing -- no suites, ties or heels. In most rural communities, blue jeans and hiking boots will work the best. Take a sleeping bag if going to a small village or traveling in bush flights. Try to make arrangements for accommodations ahead of time. If no one knows if there are any hotels, call directory assistance of the community and ask the operator for a number of a hotel. If he/she tells you there is no such place, call the city manager and seek his/her assistance in locating lodging. If that does not work call the school principal and ask he/she if you can sleep in the gymnasium.

In the Field

Having arrived in the community it is recommended that the first thing to do is walk around and get the lay of the land. Where are things located? Where is the airport in relation to the sea, what is between them? Where is the store? Go inside. What kinds of things are for sale and at what prices? What is the housing quality? Are there any new houses? Is there much vacant land in or near to the core of the community? What kind of people do you see? - children, elders, young families, fishermen? Do you see things that raise questions in your mind - for example, what is that huge building, how did this community get divided into two distinct sections, who built those apartment buildings? This reconnaissance exercise should help you to get your bearings so you can find city hall, the school, the power plant, etc. It should also give you a sense of the pace of the people.

The following sheets will frame the questions for your discussion with key informants. However, you are responsible for setting up the appointments. Public employees should be called and appointments set up during working hours. Private persons do not have to talk to you so be as flexible as possible in arranging times and places.

There are several groups of questions which follow. They are organized by subject. For different informants . different sets of questions should be posed. For example, you should ask the city manager about utilities and the school superintendent about education. However, the attitude questions should be posed to all persons interviewed because there will often be different perceptions held by various persons.

The subject of the questions are:

A. Land Use
B. Utilities
C. Housing
D. Jobs and Employment
E. Attitudes
F. Community Services
G. City Government

It is recommended that the following sets of questions be posed to the following types of informants.

1) City Manager - A. Land Use, B. Utilities, C. Housing, D. Jobs and Employment, E. Attitudes, F. Community Services and G. City Government.

2) Village Corporation - A. Land Use, C. Housing, D. Jobs and E. Attitudes.

3) Regional Corporation - A. Land Use, D. Jobs and E. Attitudes.

4) Store Owner - A. Land Use, C. Housing and E. Attitudes.

5) Health Director - E. Attitudes and F. Community Services.

6) Manpower/Employment Office - D. Jobs and E. Attitudes.

7) Superintendent of Schools - E. Attitudes and F. Community Services.

8) Principal - E. Attitudes and F. Community Services.

9) Mayor - A. Land Use, C. Housing, E. Attitudes and G. City Government.

10) Utilities Manager - A. Land Use, B. Utilities and E. Attitudes.

11) Non-Profit Corporation A. Land Use, C. Housing, D. Jobs and E. Attitudes.

These are recommended, but ask any combination that is appropriate for who you are talking to. For example, any person who has recently constructed anything in recent years should be asked about jobs.

Interview

Introduce yourself and explain what the project is and what kind of information you will be asking about.

Example:

Hello, my name is _____. I really appreciate your taking the time to meet with me. I am working on a project which will help to identify some of the changes that might occur here in _____ if and when there is oil exploration offshore from here. I work with the Federal Government, the Outer Continental Shelf Office of BLM. The information gathered will help us to write the environmental impact statement which includes social and economic conditions as well as the environment.

In general I am interested in knowing about . . . . . (different kind of information from different informants).

A. LAND USE

1) During the exploration stage, the industry needs about 10 acres of land for storage and a helicopter port in addition to a service dock for boats. Where do you think the most likely place or places for these activities would be? Why?

For each site:

a) Is there a source of drinking water near this site?

_____Yes _____No

b) Who owns the land at this site? _____

c) Do you think they would be interested in leasing or selling their land for this purpose?

_____Yes _____No

Why?

d) Are there other parties who have an interest in this site? i.e., subsurface rights or a competing surface use?

_____Yes _____No

Describe,

e) Is this site in or near a hunting and/or fishing area?

_____Yes _____No

If yes, what time of the year?

2) If oil is found, the industry would move into the development and production phase. For these activities there would be a need for 30-50 acres of land for an industrial base. If this should occur near _____ where do you think the most likely place or places for these activities would be? why? Describe.

For each site mentioned:

a) Is there a source of drinking water near this site?

_____Yes _____No

b) Who owns the land at this site? _____.

c) Do you think they would be Interested in selling or leasing?

_____Yes _____No

d) Are there other parties who have an interest in this site?

_____Yes _____No

e) Is this near a hunting and/or fishing area?

B. l-et's shift to utilities:

1) Who owns and operates the water system? _____.

Is there a good source of H_2O? _____ Yes, _____ No.

How does it get to people's houses? _____.

Are there any plans to expand the system? _____ Yes, _____ No.

If yes, what? How much? When?

Would the community be willing to share its water with the oil industry?

_____ Yes _____ No

2) Who owns and operates the sewer system? _____
How does it work? (honeybuckets, pipes, sewage lagoon?)

Are there any plans for expansion? _____ Yes, _____ No.
If yes, what are the plans, how much, when?

Would the community be willing to share the sewer system with industry? _____ Yes, _____ No.

3) Who owns and provides electricity? _____.

Are there any plans to expand the system?

_____ Yes _____ No

If yes, what are the plans? how much? when?

Would the community be able to or willing to share electricity with industry?

_____Yes _____No

4) Who is responsible for solid waste? _____.
How does it work? (community land fill, garbage pick-up?).

Any plans for expansion? _____Yes, _____No.

Would the community be able to or willing to share this facility with industry? _____Yes, _____No.

5) Who owns and operates the telephone system? _____
_____.

Are there plans for expansion? _____Yes, _____No.

Are they willing or able to provide service to the oil industry?

_____Yes _____No

C. I would like to ask a few questions about housing.

1) Does the current housing supply meet the demand?

_____Yes _____No

Describe.

2) Are you aware of any plans that anyone has to build additional housing here?

_____Yes _____No

If yes, who? what? how many? when?

3) During the exploration phase there would be a need for some housing, about _____people. Do you think those needs could be accommodated here?

_____Yes _____No

If no, where would they be likely to go?

4) During the development and production phase there would be much greater need for housing, maybe as many as _____ people. Do you think those needs could be accommodated here?

_____Yes _____No

If no, where or how would that need be likely to be met?

D. Let us move to the issue of jobs.

1) If the oil industry comes to _____ there will be some new jobs in the area. How would you describe the current employment picture here? What kinds of skills do people have and what are the problems with people getting jobs today?

2) a) During the exploration phase which lasts about 2 or 3 years there will be some good jobs for local people. If you were to guess, what % of people, who are currently working, do you think would take jobs on this short-term basis?

b) How about the % of currently unemployed people who are looking for jobs? What % would take these short-term jobs?

c) And what about the unemployed who are not looking for work. What % would take a short term job?

3) During the development and production stage the jobs could last as long as 15 years. For the same groups of people, what % of current residents do you think would take these long-term jobs?

a) currently employed _____%
b) unemployed and looking _____%
c) unemployed and not looking _____%

E. ATTITUDES

1) On general attitudes towards the potential of oil development occurring in or near _____ how do you think people in this town feel about the possibility? Describe (maybe different segments).

2) Do you think people here would be willing to have new people come in and use the stores and restaurants/bars?

_____Yes _____No

What if they lived in a camp away from home?

_____Yes _____No

3) Do you think that people here would be willing to have new people hunt and fish around town?

_____Yes _____No

What if they lived in a camp away from town?

_____Yes _____No

F. COMMUNITY SERVICES

1.a) Schools - How good do you think the quality of education and the schools are here?

b) Are there any plans to expand the school?

_____Yes _____No

If yes, what are the plans? when? how many rooms?

c) Would the school be able to handle a rapid growth of students?

_____Yes _____No

2a) How good would you say the current police protection is?

b) Are there any plans to expand the police force?

c) Would it be likely that police protection would be provided to an oil industry if it was in or near town?

_____Yes _____No

Why?

3.a) How about the fire department. Is it good?

b) Any plans to expand the fire fighting capability of the town?

c) Would it be likely that fire protection would be extended to an oil industry camp if it was in or near town?

_____Yes _____No

Why?

4a) Medical - Who are the main health providers? What is the current capacity, number of beds or doctors?

b) Are there any plans to expand the medical facility?

c) Would the providers be likely to offer medical services to an oil industry camp if it were in or near to town?

_____Yes _____No

Why?

CITY GOVERNMENT

1) Does the city currently have land use controls, such as a zoning ordinance or a coastal management plan?

_____Yes _____No

If yes, describe what kind.

If no, are there any plans to institute any in the future?

_____Yes _____No

Describe.

2) How long has the mayor served in his/her current capacity? _____years.

3) Is there much turnover on the City Council?

_____Yes _____No

Describe.

CLOSING

Thank you very much for all your time, I really appreciate your responses.

Are there any other people who you think I should talk to?

APPENDIX C

INDIRECT IMPACTS OF INDUSTRIAL DEVELOPMENT BY CATEGORY

INDIRECT IMPACTS OF INDUSTRIAL DEVELOPMENT

I. Social Impacts

A. Population

1) Change in population composition (age, sex, race)

2) People relocate due to dissatisfaction w/ community

3) Reduced outmigration of local people to urban areas

4) Population decreases following construction and production phases

B. Local Government

1) Administration

a) Annexation or creation of new types (e.g., boroughs)

b) Increase in turnover of officials and public employees

c) Increase in newcomers involved in government

d) Change in expectation of government performance

e) More planning and impact studies needed

f) Time and personnel required to govern increases

g) Public participation increases

h) New services demanded

i) New facilities required

j) Legal work increases

k) Increase in perception of political powerlessness by some community members

Administration Continued:

l) Increased political power of land-owning Village & Native Corporations

m) Disputes between pro-and anti-development factions increase

n) Decrease in kinship-based authority

o) Overcapacity of services following peak activity

2) Fiscal Resources

a) More opportunity for shared investment

b) Increase in tax revenues

c) Increase in expenditures prior to revenue increase

d) Increase in debt financing and bonding of public infrastructure

e) Fiscal resources reduced after production phase when tax base decreases

f) High facility maintenance expenditure following peak activity

C. Health Care

1) More medical personnel needed

2) Medical personnel turnover increases

3) Change in orientation from self-care to professional care

4) Limited facilities are burdened

5) New facilities and technology available

6) Change in structure of health care delivery system

7) Increase in medical emergency transportation demand

Health Care Continued:

8) Increase in potential for industry support of community health services

9) Mental health needs increase

D. Schools

1) School enrollment exceeds capacity

2) More teachers and rooms needed

3) Teacher turnover higher and more stress

4) Change in curriculum requested by newcomers

5) Administrative and planning demands increase

6) Conflicts increase between student's

7) More dropouts due to jobs

8) More adult education provided

E. Churches

1) Congregations increase and build more churches

2) New denominations appear

3) New social service functions appear

4) More prosletyzing occurs

5) Increase in conflicts within congregations

F. Public Safety

1) Change in crimes against property and person

2) Change in rate of alcohol and drug abuse

3) Change in rate of family disturbance and child behavior problems

4) Increase in concern about safety

Public Safety Continued:

5) Increase in racial and cultural tensions

6) Strain on courts and police

7) Rise in traffic accidents

8) Rise in violence and alcoholism during recession periods

G. Housing

1) Increase in competition for housing

2) Increase in prevalence of substandard dwellings

3) Increase in number of high quality dwellings

4) Increase in households living in over-crowded conditions as workforce increases

5) Rapid increase in housing costs as local workforce increases

H. Local Business

1) Change in way of doing business

2) Change in role of business leaders

3) Change in shopping patterns

II. Cultural Impacts

A. Subsistence (Non-Market) Economy

1) Decrease in dependence on subsistence resources for new full-time employees

2) Increased concern about protection of subsistence resources and lifestyle

3) Increase in importance of women in wage earner activities

4) Increased access to subsistence technology due to wage income

5) Decrease in amount of resources shared among village members

6) Increased competition with sport hunters and fishermen for subsistence resources

7) Less flexibility in timing of subsistence activities due to wage employment restrictions

8) Change in ways of managing cash income

9) Change in working groups for hunting, fishing, trapping

10) Decrease in subsistence skills passed between generations

B. Social Organization

1) Decreased dependence on kinship alliances and associations

2) Non-kin common interest associations increase

3) Decrease in perception of community as a cohesive society

4) Change in observance of festivals, rituals and custom

5) Increased pride in cultural heritage

6) Decrease in role of kinship groups in settling disputes

Social Organization Continued:

7) Decrease in informal social interaction

8) Increase in formal community functions (e.g., school board meetings)

9) Increased conflict of individual values vs. group values

10) Decrease in importance of elderly in family leadership

11) Decrease in traditional male roles and authority

12) Increase in authority of women in decisions

13) Change in wealth redistribution patterns

14) Decrease in number of extended-family households

15) Increase in number of single-family households

16) Increase in number of female heads of households

17) Increase in income and mobility of women

18) Increase in rate of outmarriages

C. Perception of Quality of Life

1) Decrease in satisfaction with community due to overburdened facilities and services

2) Increase in satisfaction with community due to new or expanded facilities, services and stores

3) Increase in perception of economic disparity

4) Increase in personal mobility

5 Decrease in community cohesion

6 Newcomer dissatisfaction with local stores and services

Quality of Life Continued:

7) Increased perception of community as impersonal

8) Expectation of new wealth by local people

9) Change in satisfaction with visual appearance of community

10) Increase in perceived pace of life in community

0. Communication

1) Decreased usage of indigenous languages

2) Increased contact with outside world

3) Television, books and magazines become more common

III. Economic Impacts

A. Employment

1) Change in local labor force participation

2) Increase in job competition with newcomers.

3) Skill levels of local labor increase

4) Increase in employment in services, construction, and transportation

5) Increase in local government employment

6) Local firms and government face competition for limited labor supply

7) Local firms and government experience increased employee turnover

8) Skills in traditional industries such as fishing and subsistence, decline.

9) Number of temporarily unemployed workers increases due to arrival of job seekers

B. Income

1) Increased dependence on cash income

2) Increase in income differentials

3) Increase in community income

4) Increase in local inflation rate

5) Decrease in real value of fixed incomes

6) Increased income leakage to regional centers

C. Structure and Function of Local Economy

1) Businesses expand in anticipation of increased demand

2) New businesses are established

3) Increase in goods and services available

Structure/Function of Local Economy Continued:

4) Increased business operating costs (rent and labor')

5) Cost-Price squeeze in existing primary industries such as fishing

6) New and expanded industries become dependent on oil revenue

7) Local economic recessions occur following peak periods

8) Increased demand for services, construction, and transportation

9) Increased demand for Native crafts due to more outsiders

10) Relative decrease in importance of existing primary industries (such as fishing)

11) Increase in new businesses purchased by outsiders

D. Real Estate

1) Property values increase

2) Land speculation increases

3) Increase in land purchased by outside investors

4) Increase in property tax rate as public facilities expand

5) Decrease in property tax rate as tax base increases

APPENDIX D

INDIRECT IMPACTS ASSOCIATED WITH EACH DIRECT IMPACT

1NDUSTR% USES FEW LOCAL SUPPLIERS AND CONTRACTORS

	Category
Expectation of new wealth by local people	II-C-8
Small increase in local inflation rate	III-B-4
A few businesses expand in anticipation of increased demand	III-C-1
A few businesses are established	III-C-2
Small increased demand for services, construction, and transportation	I I I-C-8
Slight increase in new businesses purchased by outsiders	III-C-11
Property values increase	III-D-1
Land speculation increases	III-D-2
Small increase in land purchased by outside investors	II I-D-3

A-2

LITTLE USE OF LOCAL LABOR RELATIVE TO LOCAL LABOR FORCE

	Category
Small increase in rate of alcohol and drug abuse	I-F-2
Slightly increased access to subsistence technology due to wage income	II -A-4
Slight change in working groups for hunting, fishing, trapping	II-A-9
Increase in perception of economic disparity	II-C-3
Increased contact with outside world	II-D-2
Small increase in job competition with newcomers	III-A-2
Skill levels of local labor increase slightly	III-A-3
Small increase in employment in services, construction, and transportation	III-A-4
Local firms and government experience small increase in employee turnover	III-A-7
Slight increase in income differentials	III-B-2
Small increase in community income	III-B-3
Increase in local inflation rate	III-B-4
Small increase in business operating costs (rent and labor)	III-C-4
Slight increase in *new businesses* purchased by outsiders	III-C-11

FEW LAND USE CONFLICTS

	Category
Decrease in satsifaction with visual appearance of community	II-C-9
Increase in local inflation rate	111-6-4
Increased business operating costs (rent and labor)	III-C-4
Cost-price squeeze in existing primary industries (such as fishing)	III-C-5
Property values increase	111-0-1
Land speculation increases	111-0-2
Increase in land purchased by outside investors	III-D-3

INCREASED USE OF SOME OR ALL TRANSPORTATION FACILITIES BUT NO SERIOUS CONGESTION

	Category
Increased perception of community as impersonal	II-C-7
Increase in perceived pace of life in community	II-C-10
Increased contact with outside world	II-D-2
Small increase in rate of alcohol and drug abuse	I-F-2
Small increase in local government employment	III-A-5

INCREASED USE OF SOME OR ALL UTILITIES BUT NONE ARE OVER CAPACITY

	Category
Increase in perceived pace of life in community	II-C-10
Small increase in local government employment	III-A-5

INCREASED USE, OF SOME OR ALL SERVICES BUT NONE ARE OVER CAPACITY

	Category
New services may be requested	I-B1-h
Small increase in medical emergency transportation demand	I-C-7
Small increase in potential for industry support of community health services	I-C-8
Possible decrease in traditional means, such as suasion of kinship group leaders in settling disputs	II-B-6
Increase in perceived pace of life in community	II-C-10
Small increase in local government employment	III-A-5

NO INCREASE IN COMMUNITY TAX BASE

	Category
Expenditures likely to increase prior to revenues	I-B2-c

LITTLE INCREASE IN POTENTIAL TAX BASE OUTSIDE COMMUNITY

	Category
Possible annexation or creation of new types of government (e.g., boroughs)	I-B1-a
Possible increase in tax revenues	I-B2-b

LOW INMIGRATION OF NEW RESIDENTS	Category
Possible annexation or creation of new types of government (e.g., boroughs)	I-B1-a
Small increase in turnover of officials and public employees	I-B1-b
Small increase in newcomers involved in government	I-B1-c
Change in expectation of government performance	I-B1-d
More planning and impact studies needed	I-B1-e
Slight public participation increases	I-B1-g
Some new services requested	I-B1-h
Mental health needs increase slightly	I-C-9
Administrative and planning demands increase slightly	I-D-5
Minimal conflict increases between students	I-D-6
A few social service functions appear	I-E-3
Small increase in crimes against property and person	I-F-1
Small increase in rate of alcohol and drug abuse	I-F-2
Small increase in rate of' family disturbance and child behavior problems	I-F-3
Small increase in concern about safety	I-F-4
Small rise in traffic accidents	I-F-7
Small increase in competition for housing	I-G-1
Small increase in prevalence of substandard dwellings	I-G-2
Small increase in number of high quality dwellings	I -G-3
Small increase in households and size of family units living in over-crowded conditions as workforce increases	I-G-4
Rapid increase in housing costs as local workforce increases	I-G-5

Some decreased dependence on kinship alliances and associations	II-B-1
Non-kin common interest associations increase	II-B-2
Decrease in perception of community as a cohesive society	II-B-3
Increased pride in cultural heritage	II-B-5
Decrease in role of kinship groups in settling disputes	II -B-6
Increase in formal community functions (e.g., school board meetings)	II-B-8
Increased conflict of individual values vs. group values	II-B-9
Some decrease in importance of elderly in family leadership	II-B-10
Increase in perception of economic disparity	II-C-3
Decrease in community cohesion	II -C-5
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community as impersonal	II-C-7
Change in satisfaction with visual appearance of community	II-C-9
Increase in perceived pace of life in community	II-C-10
Increased contact with outside world	II-D-2
Television, books and magazines become more common	II-D-3
Local firms and government experience some increased employee turnover	III-A-7
Number of temporarily unemployed workers increases slightly due to arrival of job seekers	III-A-9
Increase in income differentials	III-B-2
Some businesses expand in anticipation of increased demand	III-C-1

A few new businesses are established	III-C-2
Small increase in goods & services available	III-C-3
Small increase in business operating costs (rent and labor)	III-C-4
Slight cost-price squeeze in existing primary industries (such as fishing)	III-C-5
Property values increase	III-D-1
Land speculation increases	III-D-2
Small increase in land purchased by outside investors	III-D-3

LITTLE USE OF COMMUNITY SERVICES AND FACILITIES BY EMPLOYEES LIVING IN CAMPS

	Category
Change in expectation of government performance	I-B1-d
Increase in medical emergency transportation demand	I-C-7
Increase in formal community functions (e.g., school board meetings)	II-B-8
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community as impersonal	II-C-7
Expectation of new wealth by local people	II-C-8
Increase in perceived pace of life in community	II-C-10
Small increase in local government employment	III-A-5
Small increase in demand for services, construction and transportation	III-C-8

LIMITED INCREASE IN USE OF BARS AND STORES BY EMPLOYEES LIVING IN CAMPS

	Category
Mental health needs increase	I -C-9
Small increase in crimes against property and person	I-F-1
Small increase in rate of alcohol and drug abuse	I -F-2
Increase in concern about safety	I-F-4
Small increase in racial and cultural tensions	I-F-5
Small rise in traffic accidents	I-F-7
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community as impersonal	II-C-7
Expectation *of* new wealth by local people	II-C-8
Increase in perceived pace of life in community	II-C-10
Small increase in local inflation rate	III-B-4
Property values increase	III-D-1

LIMITED INCREASE IN THE USE OF LOCAL HUNTING AND FISHING AREAS BY NEWCOMERS '

	Category
Mental health needs increase	I-C-9
Small increase in crimes against property and person	I-F-1
Increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Increased concern and community actions about protection of subsistence resources and lifestyle	II 4-2
Increase in competition with sport hunters and fishermen for subsistence resources	II-A-6

INDUSTRY USES SOME LOCAL SUPPLIERS AND CONTRACTORS

	Category
Expectation of new wealth by local people	II-C-8
Small increase in community income	III-B-3
Moderate increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	111-8-5
Some businesses expand in anticipation of increased demand	III-C-1
Several new businesses are established	III-C-2
Small increase in goods and services available	III-C-3
New and expanded industries become dependent on oil revenue	III-C-6
Local economic recessions occur following peak periods	III-C-7
Increased demand for services, construction and transportation	III-C-8
Moderate increase in new businesses purchased by outsiders	III-C-11
Property values increase	III-D-1
Land speculation increases	III-D-2
Increase in land purchased by outside investors	III-D-3

MODERATE USE OF LOCAL LABOR RELATIVE TO LOCAL LABOR FORCE

	Category
Reduced outmigration of local people to urban areas	I-A-3
Mental health needs increase	I-C-9
Teacher turnover higher and more stress	I-D-3
More dropouts due to jobs	I-D-7
Increase in rate of alcohol and drug abuse	I-F-2
Increase in rate of family disturbance and child behavior problems	I-F-3
Rise in violence and alcoholism during recession periods	I-F-8
Increase in number of high quality dwellings	I-G-3
Increase in households living in over-crowded conditions as workforce increases	I-G-4
Change in shopping patterns	I-H-3
Decrease in dependence on subsistence resources for some new full-time employees	II-A-1
Large increase in importance of women in wage earner activities	II-A-3
Increased access to subsistence technology due to wage income	II-A-4
Changes (increases and decreases) in amount of resources shared among some village members	II-A-5
Less flexibility in timing of subsistence activities due to wage employment restrictions	II-A-7
Change in ways of managing cash income	II-A-8
Change in working groups for hunting, fishing, and trapping	II-A-9
Decrease in subsistence skills passed between generations	II-A-10
Changes (increases and decreases) in dependence of kinship alliances and association for some	II-B-1

B-2 Continued

Change in observance of festivals, rituals and customs	II-B-4
Decrease in informal social interaction	II-B-7
Increased conflict of individual values vs. group values	II-B-9
Decrease in importance of elderly in family leadership	II-B-10
Decreasein traditional male roles and authority	II-B-11
Increase in authority of women in decisions	II-B-12
Change in wealth redistribution patterns	II-B-13
Decrease in number of extended--family households	II-B-14
Increase in number of single-family households	II-B-15
Increase in number of female heads of households	II-B-16
Increase in income and mobility of women	II-B-17
Increase in rate of outmarriages	II-B-18
Increase in perception of economic disparity	II-C-3
Increase in personal mobility	II-C-4
Decrease in community cohesion	II-C-5
Increased perception of community as impersonal	II-C-7
Increase in perceived pace of life in community	II-C-10
Decreased usage of indigenous languages	II-D-1
Increased contact with outside world	II-D-2
Increase in local labor force participation	III-A-1
Increase in job competition with newcomers	III-A-2
Skill levels of local labor increase	III-A-3
Increase in employment in services, construction and transportation	III-A-4
Local firms and government face competition for limited labor supply	III-A-6

Local firms and government experience increased employee turnover	III-A-7
Skills in traditional industries, such as fishing and subsistence, decline	III-A-8
Increased dependence on cash income	III-B-1
Increase in income differentials	III-B-2
Increase in community income	III-B-3
Increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	III-B-5
Increased income leakage to regional centers	III-B-6
Increased business costs (rent and labor)	III-C-4
Cost-price squeeze in existing primary industries (such as fishing)	III-C-5
New and expanded industries become dependent on oil revenue	III-C-6
Local economic recessions occur following peak periods	III-C-7
Relative decrease in importance of existing primary industries (such as fishing)	III-C-10
Increase in new businesses purchased by outsiders	III-C-11

SOME LAND USE CONFLICTS

	Category
People relocate due to dissatisfaction with community	I-A-2
Increased political power of land-owning village and native corporations	I-B1-1
Decrease in satisfaction with visual appearance of community	II-C-9
Increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	III-B-5
Increased business operating costs (rent and labor)	III-C-4
Cost-price squeeze in existing primary industries (such as fishing)	III-C-5
Property values increase	III-D-1
Land speculation increases	III-D-2
Increase in land purchased by outside investors	III-D-3
Increase in racial and cultural tensions	I-F-5

ONE TO THREE TRANSPORTATION FACILITIES EXPAND PRIOR TO INCREASE IN TAX BASE

	Category
People relocate due to dissatisfaction with community	I-A-2
Time and personnel required to govern increases	I-B1-f
New facilities required	I-B1-i
More opportunity for shared investment	I-B2-a
Increase in expenditures prior to revenue increase	I-B2-c
Increase in debt financing and bonding of public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
Rise in traffic accidents	I-F-7
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities, services and stores	II-C-2
Increase in perceived pace of life in community	II-C-10
Increase in local government employment	III-A-5
Increase in property tax rate if public facilities expand prior to increase in tax base	III-D-4
More planning and impact studies needed	I-B1-e

ONE TO THREE UTILITIES ARE AT OR OVER CAPACITY DUE TO SHARING

	Category
Time and personnel required to govern increases	I-B1-f
New facilities required	I-B1-i
More opportunity for shared investment	I-B2-a
Increase in expenditures prior to revenue increase	I-B2-c
Increase in debt financing and bonding due to public infrastructure	I-B2-d
High facility maintenance expenditure following peak periods	I-B2-f
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities, services and stores	II-C-2
Increase in perceived pace of life in community	II-C-10
Increase in local government employment	III-A-5
Increase in property tax rate if public facilities expand prior to increase in tax base	III-D-4
People relocate due to dissatisfaction with community	I-A-2
More planning and impact studies needed	I-B1-e

ONE TO TWO SERVICES ARE AT OR OVER CAPACITY DUE TO SHARING

	Category
People relocate due to dissatisfaction with community	I-A-2
More planning and impact studies needed	I-B1-e
Time and personnel required to govern increases	I-B1-f
New services demanded	I-B1-h
Over capacity of services, following peak activity	I-B1-o
More opportunity for shared investment	I-B2-a
Increase in expenditures prior to revenue increase	I-B2-c
Increase in debt financing and bonding of public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
More medical personnel needed	I-C-1
Medical personnel turnover increases	I-C-2
Limited facilities are burdened	I-C-4
New facilities and technology available	I-C-5
Change in structure of health care delivery system	I-C-6
Increase in medical emergency transportation demand.	I-C-7
Increase in potential for industry support of community health services	I-C-8
Decrease in role of kinship groups in settling disputes	II-B-6
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities, services and stores	III-C-2
Increase in perceived pace of life in community	II-C-10
Increase in local government employment	III-A-5
Increase in property tax rate if public facilities expand prior to tax base increase	III-D-4

SOME INCREASE IN COMMUNITY TAX BASE

	Category
More planning and impact studies needed	I-B1-e
Possible increase in tax revenues	I-B2-b
Increase in public goods and services available	III-C-3
Decrease in property tax rate as tax base increases	III-D-5

SOME INCREASE IN POTENTIAL TAX BASE OUTSIDE COMMUNITY

	Category
Annexation or creation of new types of government (e.g., boroughs)	I-B1-a
More planning and impact studies needed	I-B1-e
Increase in public goods and services available	III-C-3
Increase in tax revenues	I-B2-B

MODERATE INMIGRATION OF NEW RESIDENTS

	Category
Moderate change in population composition (age, race, sex)	I-A-1
Large population decreases following construction and production phases	I-A-4
Annexation or creation of new types of government (e.g., boroughs)	I-B1-a
Moderate increase in turnover of officials and public employees	I-B1-b
Moderate increase in newcomers involved in government	I-B1-c
Change in expectation of government performance	I-B1-d
More planning and impact studies needed	I-B1-e
Time and personnel required to govern increases	I-B1-f
Public participation increases	I-B1-g
New services demanded	I-B1-h
Increase in perception of political powerlessness by some community members	I-B1-k
Decrease *in* kinship-based authority	I-B1-n
Mental health needs increase	I-C-9
School enrollment exceeds capacity	I-D-1
More teachers and rooms needed	I-D-2
Teacher turnover higher and more stress	I-D-3
Change in curriculum requested by newcomers	I-D-4
Administrative and planning demand increase	I-D-5
Conflicts increase between students	I-D-6
More adult education provided	I-D-8
Congregations increase and build more churches	I-E-1
New denominations appear	I-E-2

New social service functions appear in churches	I-E-3
More prosletyzing occurs	I-E-4
Increase in conflicts within congregations	I-E-5
Increase in crimes against property and person	I-F-1
Increase in rate of alcohol and drug abuse	I-F-2
Increase in rate of family disturbance and child behavior problems	I-F-3
Increase in concern about safety	I-F-4
Increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Rise in traffic accidents	I-F-7
Increase in competition for housing	I-G-1
Increase in prevelance of substandard dwellings	I-G-2
Increase in number of high quality dwellings	I-G-3
Increase in households living in over-crowded conditions as workforce increases	I -G-4
Rapid increase in housing costs as local workforce increases	I-G-5
Change in orientation from self-care to professional care	I-C-3
Change in way of doing business	I-H-1
Change in role of business leaders	I-H-2
Change in shopping patterns	I-H-3
Decreased dependence on kinship alliances and associations	II-B-1
Non-kin common interest associations increase	II-B-2
Decrease in perception of community as a Cohesive society	II-B-3
Change in observance of festivals, rituals and customs	II-B-4

	B-9 Continued
Increased pride in cultural heritage	II-B-5
Decrease in role of kinship groups in settling disputes	II-B-6
Increase in formal community functions (e.g., school board meetings)	II-B-8
Increased conflict of individual values vs. group values	II-B-9
Decrease in importance of elderly in family leadership	II-B-10
Decrease in traditional male roles and authority	II-B-11
Increase in authority of women in decisions	II-B-12
Decrease in number of extended-family households	II-B-14
Increase in number of single-family households	II-B-15
Increase in number of female heads of households	II-B-16
Increase in rate of outmarriages	II-B-18 "
Increase in perception of economic disparity	II-C-3
Decrease in community cohesion	II-C-5
Newcomer dissatisfaction with local *stores* and services	II-C--6
Increased perception of community as impersonal	II-C-7
Change in satisfaction with visual appearance of community	II-C-9
Increase in perceived pace of life in community	II-C-IO
Decreased usage of indigenous language	II-D-1
Increased contact with outside world	II-D-2
Television, books and magazines become more common	II-D-3
Local firms and government experience increased employee turnover	III-A-7

Skills in traditional industries, such as fishing and subsistence decline	III-A-8
Number of temporarily unemployed workers increases due to arrival of job seekers	III-A-9
Increase in income differentials	III-B-2
Increased income leakage to regional centers	III-B-6
Businesses expand in anticipation of increased demand	III-C-1
New businesses are established	III-C-2
Increase in goods and services available	III-C-3
Increased business operating costs (rent and labor)	III-C-4
Cost-price squeeze in existing primary industries (such as fishing)	III-C-5
Increased demand for Native crafts due to more outsiders	III-C-9
Property values *increase*	III-D-1
Land speculation increases	III-D-2
Increase in land purchased by outside investors	III-D-3

MODERATE USE OF COMMUNITY SERVICE AND FACILITIES BY EMPLOYEES LIVING IN CAMPS

	Category
People relocate due to dissatisfaction with community	I -A-2
Increase in turnover of officials and public employees	I-B1-B
Change in expectation of government performance	I-B1-d
New facilities required	I-B1-i
Over capacity of services following peak activity	1-81-0
Increase in expenditures prior to revenue increase	I-B2-c
Increase in debt financing and bonding of public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
More medical personnel needed	I-C-1
Medical personnel turnover increases	I-c-2
Limited facilities are burdened	I-C-4
New facilities and technology available	I-C-5
Change in structure of health care delivery system	I-C-6
Increase in medical emergency transportation demand	I-C-7
Mental health needs increase	I-C-9
Administrative and planning demands increase	I-D-5
Decrease in role of kinship groups in settling disputes	II-B-6

B-10 Continued

Increase in formal community functions (e.g., school board meetings)	II-D-8
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities, services and stores	II-C-2
Newcomer dissatisfaction with local stores and services . .	II-C-6
Increased perception of community as impersonal	II-C-7
Expectation of new wealth by local people	II-C-8
Increase in perceived pace of life *in* community	II-C-10
Increase in local government employment	III-A-5
Increase demand for services, construction and transportation	III-C-8
Increase in property tax rate as public facilities expand	III-D-4

MODERATE INCREASE IN USE OF BARS AND STORES BY EMPLOYEES LIVING IN CAMPS

	Category
Mental health needs increase	I-C-9
Change in crimes against property and person	I-F-1
Change in rate of alcohol and drug abuse	I-F-2
Change in rate of family disturbance and child behavior problems	I-F-3
Increase in concern about safety	I-F-4
Increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Rise in traffic accidents	I-F-7
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community as impersonal	II-C-7
Expectation of new wealth by local people	II-C-8
Increase in perceived pace of life in community	II-C-10
Television, books and magazines become more common	II-D-3
Increase in employment in services, construction and transportation	III-A-4
Increase in community income	III-B-3
Increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	III-B-5
Businesses expand in anticipation of increased demand	III-C-1
New businesses are established	III-C-2
Increase in goods and services available	III-C-3
New and expanded industries become dependent on oil revenue	III-C-6

Local economic recessions occur following peak periods	III-C-7
Relative decrease in importance of existing primary industries (such as fishing)	III-C-10
Increase in new businesses purchased by outsiders	III-C-11
Property values increase	III-D-1
Land speculation increases	III-D-2
Increase in land purchased by outside investors	III-D-3

MODERATE USE OF LOCAL HUNTING AND FISHING AREAS BY NEWCOMERS

	Category
Mental health needs increase	I-C-9
Change in crimes against property and person	I-F-1
Increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Increased concern about protection of subsistence resources and lifestyle	II-A-2
Increased competition with sport hunters and fishermen for subsistence resources	II -A-6

INDUSTRY PURCHASES MANY SUPPLIES LOCALLY

	Category
Expectation of new wealth by local people	II-C-8
Large increase in community income	III-B-3
Large increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	III-B-5
. Many businesses expand in anticipation of increased demand	III-C-1
Many new *businesses* are established	III-C-2
Large increase in goods and services available	III-C-3
New and expanded industries become dependent on oil revenue	III-C-6
Local economic recessions occur following peak periods	III-C-7
Increase demand for services, construction and transportation	III-C-8
Relative decrease in importance of existing primary industries (such as fishing)	III-C-10
Large increase in new businesses purchased by outsiders	III-C-11
Property values increase	III-D-1
Land speculation increases	III-D-2
Increase in land purchased by outside investors	III-D-3

SIGNIFICANT USE OF LOCAL LABOR RELATIVE TO LOCAL LABOR FORCE

	Category
Reduced outmigration of local people to urban areas	I-A-3
Mental health needs increase	I-C-9
Teacher turnover higher and more stress	I -0-3
Many more dropouts due to jobs	I -D-7
Increase in rate of alcohol and drug abuse	I-F-2
Increase in rate of family disturbance and child behavior problems	I-F-3
Large rise in violence and alcoholism during recession periods	I-F-8
Increase in number of high quality dwellings	I -G-3
Increase in households living in over-crowded conditions as workforce increases	I -G-4
Change in shopping patterns	I-H-3
Decrease in dependence on subsistence resources for new full-time employees	II-A-1
Increase in importance of women in wage earner activities	II-A-3
Increase access to subsistence technology due to wage income	II-A-4
Decrease in amount of resources shared among village members	II-A-5
Change in ways of managing cash income	II-A-8
Less flexibility in timing of subsistence activities due to wage employment restrictions	II-A-7
Change in working groups for hunting, fishing, and trapping	II-A-9
Decrease in subsistence skills passed between generations	II-A-1(I
Decreased dependence on kinship alliances and associations	II-B-1

Change in observance of festivals, rituals and Customs	II-B-4
Decrease in informal social interaction	II-B-7
Increased conflict of individual values vs. group values	II-B-9
Decrease in importance of elderly in family leadership	II-B-10
Decrease in traditional male roles and authority	II-B-11
Increase in authority of women in decisions	II-B-12
Change in wealth redistribution patterns	II-B-13
Decrease in number of extended-family households	II-B-14
Increase in number of single-family households	II-B-15
Increase in number of female heads of households	II-B-16
Increase' in income and mobility of women	II-B-17
Increase in rate of outmarriages	II-B-18
Increase in perception of economic disparity	II-C-3
Increase in personal mobility	II-C-4
Decrease in community cohesion	II-C-5
Increased perception of community as impersonal	II-C-7
Increase in perceived pace of life in community	II-C-10
Decreased usage of indigenous languages	II-D-1
Increased contact with outside world	II-D-2
Change in local labor participation	III-A-1
Increase in job competition with newcomers	III-A-2
Skill levels of local labor increase	III-A-3
Increase in employment in services, construction and transportation	III-A-4

Local firms and government face competition for limited labor supply	III-A-6
Local firms and government experience increased employee turnover	III-A-7
Skills in traditional industries, such as fishing and subsistence, decline	III -A-8
Increased dependence on cash income	III-B-1
Increase in income differentials	III-B-2
Increase in community income	III-B-3
Increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	111-8-5
Increased income leakage to regional centers	III-B-6
Increased business operating costs (rent and labor)	III-C-4
Cost-price squeeze in existing primary industries (such as fishing)	III-C-5
New and expanded industries become dependent on oil revenue	III-C-6
Local economic recessions occur following peak periods	III-C-7
Relative decrease in importance of existing primary industries (such as fishing)	III-C-10
Increase in new businesses purchased by outsiders	III-C-11

MANY LAND USE CONFLICTS

	Category
People relocate due to dissatisfaction with community	I-A-2
Increased political power of land-owning Village and Native Corporations	I-B1-1
Decrease in satisfaction with visual appearance of community	II-C-9
Large increase in local inflation rate	III-B-4
Decrease in real value of fixed incomes	III-B-5
Large increase in business operating costs (rent and labor)	III-C-4
Cost-price squeeze inexisting primary industries (such as fishing)	III-C-5
Property values increase significantly	III-D-1
Land speculation increases	III-D-2
Large increase in land purchased by outside investors	III-D-3
Large increase in racial and cultural tensions	I-F-5

ALL TRANSPORTATION FACILITIES CONGESTED DUE TO SHARED USE

	Category
People relocate due to dissatisfaction with community	I -A-2
Time and personnel required to govern increases	I-B1-f
New facilities required	I-B1-i
More opportunity for shared investment	I-B2-a
Large increase in expenditures prior to revenue increase	I-B2-c
Large increase in debt financing and bonding of' public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
Large rise in traffic accidents	I-F-7
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities, services and stores	II-C-2
Increase in perceived pace of life in community	I-C-10
Large increase in local government employment	III-A-5
Increase in property tax rate if public facilities expand prior to tax base increase	III-D-4
More planning and impact studies needed	I-B1-e

FOUR OR FIVE UTILITIES ARE AT OR OVER CAPACITY DUE TO SHARING

	Category
Time and personnel required to govern increases	I-B1-f
New facilities required	I-B1-i
More opportunity for shared investment	I-B2-a
Large increase in expenditures prior to revenue increase	I-B2-c
Large increase in debt financing and bonding of public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities, services and stores	II-C-2
Increase in perceived pace of life in community	II-C-10
Increase in local government employment	III-A-5
Increase in property tax rate as public facilities expand	III-D-4
More planning and impact studies needed	I-B1-e

THREE SERVICES ARE AT OR OVER CAPACITY DUE TO SHARING

	Category
People relocate due to dissatisfaction with community	I-A-2
More planning and impact studies needed	I-B1-e
Time and personnel required to govern increases	I-B1-f
New services demanded	I-B1-h
Over capacity of services following peak activity	I-B1-o
More opportunity for shared investment	I-B2-a
Increase in expenditures prior to revenue increase	I-B2-c
Increase in debt financing and bonding of public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
More medical personnel needed	I-C-1
Medical personnel turnover increases	I-C-2
Limited facilities are burdened	I-C-4
New facilities and technology available	I-C-5
Change in structure of health care delivery system	I-C-6
Increase in medical emergency transportation demand	I-C-7
Increase in potential for industry support of community health services	I-C-8
Decrease in role of kinship groups in settling disputes	II-B-6
Decrease in satisfaction with community due to overburdened facilities and services	II-C-1
Increase in satisfaction with community due to new or expanded facilities services and stores	II-C-2

Increase in perceived pace of life in community	II-C-10
Increase in local government employment	III-A-5
Increase in property tax rate if public facilities expand prior to tax base -increase	III-D-4

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	Category
More planning and impact studies needed	I-B1-e
Fiscal resources reduced after production phase when tax base decreases	I-B2-e
Large increase in public goods and services available	III-C-3
Decrease in property tax rate as tax base increases	III-D-5
Large increase in tax revenues	I-B2-b

SIGNIFICANT INCREASE IN POTENTIAL TAX BASE OUTSIDE COMMUNITY

	Category
Annexation or creation of new types of government (e.g., boroughs)	I-B1-a
More planning and impact studies needed	I-B1-e
Large increase in public goods and services available	III-C-3
Decrease in property tax rate as tax base increases	III-D-5
Large increase in tax revenues	I-B2-b

SIGNIFICANT INMIGRATION OF NEW RESIDENTS

	Category
Large change in population composition (age, sex, race)	I-A-1
Large population decreases following construction and production phases	I -A-4
Annexation or creation of new types of government (e.g., boroughs)	I-B1-a
Increase in turnover of officials and public employees	I-B1-b
Increase in newcomers involved in government	I-B1-c
Change in expectation of government performance	I-B1-d
More planning *and* impact studies needed	I-B1-e
Time and personnel required to govern increases	I-B1-f
Public participation increases	I-B1-g
New services demanded	I-B1-h
Increase in perception of political powerlessness by some community members	I-B1-k
Decrease in kinship-based authority	I-B1-n
Change in orientation. from self-care to professional health care	I-C-3
Mental health needs increase	I -c-9
School enrollment greatly exceeds capacity	I-D-1
Many more teachers and rooms needed	I-D-2
Teacher turnover much higher and more stress	I-D-3
Many changes in curriculum requested by newcomers	I-D-4
Administrative and planning demands increase	I-D-5
Conflicts increase between students	I -D-6
More adult education provided	I-D-$

Congregations increase and build more churches	I-E-1
New denominations appear	I -E-2
New social service functions appear	I-E-3
More prosletyzing occurs	I-E-4
Increase in conflicts within congregations	I-E-5
Moderate to large increase in crimes against property and person	I-F-1
Increase in rate of alcohol and drug abuse particularly after peak periods	I-F-2
Increase in rate of family disturbance and child behavior problems	I-F-3
Increase in concern about safety	I -F-4
Increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Large rise in traffic accidents	I-F-7
Large increase in competition for housing	I-G-1
Large increase in prevelance of substandard dwellings	I-G-2
Some increase in number of high quality dwellings	I-G-3
Large increase in households living in over-crowded conditions as work-force increases	I -G-4
Rapid increase in housing costs as local work-force increases	I-G-5
Change in way of doing business	I-H-1
Change in role of business leaders	I-H-2
Change in shopping patterns	I-H-3
Decreased dependence on kinship alliances and associations	II-B-1
Nom-kin common interest associations increase	II-B-2

Decrease in perception of community as a *cohesive* society	II-B-3
Change in observance of festivals, rituals and customs	II-B-4
Increased pride in cultural heritage	II-B-5
Decrease in role of kinship groups in settling disputes	II-B-6
Increase in formal community functions (e.g., school board meetings)	II-B-8
Increased conflict of individual values vs. group values	II-B-9
Decrease in importance of elderly *in* family leadership	II-B-10
Decrease in traditional male roles and authority	II-B-11
Increase in authority of women in decisions	II-B-12
Decrease in number of extended-family households	II-B-14
Increase in number of single-family households	II-B-15
Increase in number of female heads of households	II-B-16
Increase in rate of outmarriages	II-B-18
Increase in perception of economic disparity	II-C-3
Decrease in community cohesion	II-C-5
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community *as* impersonal	II-C-7
Decrease in satisfaction with visual appearance of community	II-C-9
Increase in perceived pace of life in community	II-C-IO
Decreased usage of indigenous languages	II-D-1
Increased contact with outside world	II-D-2
Television, books and magazines become more common	II-D-3

SIGNIFICANT USE OF COMMUNITY SERVICES AND FACILITIES BY EMPLOYEES LIVING IN ENCLAVES

	Category
People relocate due to dissatisfaction with community	I-A-2
Large increase in turnover of officials and public employees	I-B1-b
Change in expectation of government performance	I-B1-d
Many new facilities required	I-B1-i
Over *capacity* of services following peak activity	I-B1-o
Large increase in expenditures prior to revenue increase	I-B2-c
Large increase in debt financing and bonding of public infrastructure	I-B2-d
High facility maintenance expenditure following peak activity	I-B2-f
Many more medical personnel needed	I-C-1
Medical personnel turnover increases	I-C-2
Limited facilities are burdened	I-C-4
New facilities and technology available	I-C-5
Change in structure of health care delivery System	I-C-6
Increase in medical emergency transportation demand	I-C-7
Mental health needs increase	I-C-9
More teachers and rooms needed	I-D-2
Teacher turnover higher and more stress	I-D-3
Administrative and planning demands increase	I-D-5
Conflicts increase between students	I-D-6
Decrease in role of kinship groups in settling disputes	II-B-6

C-10 Continued

Decrease in informal social interaction	II-B-7
Increase in formal community functions (e.g., school board meetings)	II-B-8
Decrease in satisfaction with community due to overburdened facilties and services	II-C-1
Increase in satisfaciton with community due to new or expanded facilities, services and stores	II-C-2
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community as impersonal	II-C-7
Expectation of new wealth by local people	II-C-8
Increase in perceived pace of life in community	II-C-10
Large increase in local government employment "	III-A-5
Large increase demand for services, construction and transportation	III-C-8
Large increase in property tax rate as public facilities expand (prior to tax base increase)	III-D-4

SIGNIFICANT USE OF BARS AND STORES BY EMPLOYEES LIVING IN ENCLAVES

	Category
Mental health needs increase	I-C-9
Large increase in crimes against property and person	I-F-1
Large increase in rate of alcohol and drug abuse, particularly after peak periods	I-F-2
Increase in rate of family disturbance and child behavior problems	I-F-3
Increase in concern about safety	I-F-4
Increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Large rise in traffic accidents	I-F-7
Newcomer dissatisfaction with local stores and services	II-C-6
Increased perception of community as impersonal	II-C-7
Expectation of new wealth by local people	II-C-8
Increase in perceived pace of life in community	II-C-10
Television, books and magazines become more common	II-D-3
Large increase in employment in services, construction and transportation	III-A-4
Large increase in community income	III-B-3
Large increase in local inflation rate	III-B-4
Significant decrease in real value of fixed incomes	III-B-5
Many businesses expand in anticipation of increased demand	III-C-1
Many new businesses are established	III-C-2
Large increase in goods and services available	III-C-3
New and expanded industries become dependent on oil revenue	III-C-6

Local economic recessions occur following peak periods	III-C-7
Large increase in demand for services, construction and transportation	III-C-8
Relative decrease in importance of existing primary industries (such as fishing)	III-C-10
Large increase in new businesses purchased by outsiders	III-C-11
Property values increase substantially	III-D-1
Land speculation increases	III-D-2
Increase in land purchased by outside investors	III-D-3

SIGNIFICANT USE OF LOCAL HUNTING AND FISHING AREAS BY NEWCOMERS	*Category*
Mental health needs increase	I-C-9
Large increase in racial and cultural tensions	I-F-5
Strain on courts and police	I-F-6
Increased concern about protection of subsistence resources and lifestyles	II-A-2
Large increase in competition with sport hunters and fishermen for subsistence resources	II-A-6
Increase in crimes against property and person	I-F-1

APPENDIX E

RELATION BETWEEN INDIRECT IMPACTS ON SCHOOLS AND DIRECT IMPACTS

(An Example)

APPENDIX E

Relation Between Indirect Impacts on Schools and Direct Impacts: An Example

The indirect impacts on schools listed in Appendix D include the following:

- School enrollment exceed capacity
- More teachers and rooms needed
- Teacher turnover higher and more stress
- Change in curriculum requested by newcomers
- Administrative and planning demands increase
- Conflicts increase between students
- More dropouts due to jobs
- More adult education needed

Each of these is associated with certain direct impacts in the following way:

Enrollment exceeds capacity. First of all, the rapid influx of school-age children associated with even a moderate immigration of workers and their families fast outpaces the ability of communities to expand the schools and maintain or upgrade the quality of the programs, Keeping pace with rapid growth often means that hiring new teachers will be done at the expense of school *maintenance, increases* in non-instructional staff, and development of new programs.

More teachers and rooms needed. Fortunately, the national surplus of teachers coincides with this period of rapid growth, but finding teachers willing to live in isolated, harsh or expensive environments still presents a problem. Finding housing for teachers constitutes a major problem when housing shortages and prices skyrocket.

Teacher turnover and more stress. Expensive housing, the relatively lower income of teachers vis a vis oil industry employees, increased stresses due to large classes and long hours, planning requirements, and new curriculum demands all combine to bring about a turnover in teachers and other school personnel. The availability of higher-paying industry jobs leads teachers to resign and take jobs with the new industry.

Change in curriculum. On the positive side, new students and their parents bring new ideas into the school system and place demands on schools to have more varied curricula, services and facilities. In the long run, school curricula seem to be significantly updated and expanded with the immigration of new residents.

Administrative and planning demands increase. Differences between the established population of students and the newcomers create new administrative and planning demands in order to meet the needs of all children in the school system. Teachers report that a great deal of their time is spent integrating new students into the classroom. The high mobility of the work force brings high turnover in students. In other cases where this work force has brought families with them, up to one-half of a school class may be enrolled and then gone within a one-month period. School teachers report greatly increased planning needs in order to establish a sense of continuity in their classes in the face of the increased transiency of their students.

Conflicts increase between students. The schools are the locus of the earliest and most intense contact between the old and new populations. In a number of communities, educators report conflicts in values, commitment, and life style between the local students and newcomers. One of the most serious problems facing newcomer children is gaining social acceptance. This is true partly because in small communities without a history of immigration, student activities seem to be run almost entirely by established residents. Because so many students arrive rapidly and because the turnover in new students is high, little effort can be made in the initial stages to welcome newcomers. Racial differences and animosities between local children and newcomers exacerbate conflicts between students.

More dropouts due to jobs. The high-paying employment with the new industry and generally higher wages throughout the community affect the students also. Pupils can get good paying part-time jobs while they are in school but some high school students and a few junior high students will drop out of school to work full-time. If they are not old enough to get jobs in the direct labor market they will be in demand to fill jobs vacated by adults who have the necessary skills, or have acquired the necessary training to take jobs with the new industry.

More adult education. New educational needs are seen to develop in these cases. New areas of educational concern fall within the categories of vocational training (for industry skills) and "recreational" or continuing education for newcomers and their families. Demands are placed upon the existing school system to provide services which range from industry training programs to college credit classes to activities which will enrich the leisure time of workers and provide social outlets.

APPENDIX F

LITERATURE GUIDE AND WORKSHEETS

LITERATURE GUIDE

1. Using the PETROLEUM SCENARIO REPOR?' for the area being studied, determine which site or sites in or near the community meet industry requirements for each phase. Note whether the site(s) meet the requirements for either FULL or PARTIAL OPERATIONS (air or marine but not both).

Enter the information on Worksheet 1: Locations

Site A	Site B	Site C

2. Using the LOCAL SOCIOECONOMIC SYSTEMS ANALYSIS report, obtain current labor force data:

_____ Year

	Site A Community	Site B Community	Site C Community
a) population			
b) employment			
c) unemployed			
d) discouraged workers* (in labor force but not looking for job)			
e) % with OCS skills in labor 'force*			

*if not given consult field guide.

3. Using the PETROLEUM DEVELOPMENT SCENARIO REPORT obtain maximum onshore labor force requirements for the various development scenarios:

Scenario	Maximum Local Labor Desired by Industry			
	Phase 1 Exploration		Phase 2 Development	Phase 3 Production
	Local Labor	Base Type*	Local Labor	Local Labor
a) exploration only			--	--
b) low find				
c) medium find				
d) high find				

*note full or partial service base assumption.

Enter labor force data and industry labor force requirements on Worksheet 2: Employment.

4. Using the SOCIOECONOMIC SYSTEMS ANALYSIS REPORT, determine industry needs for housing in the peak year of phase and enter number of units on Worksheet 3: . Inmigration.

Phase 1 _____ Phase 2 _____ Phase 3 _____

5. Using the SOCIOECONOMIC SYSTEMS ANALYSIS REPORT, determine the present capacities of the various utilities listed on Worksheet 4: Utilities. Enter the data in Column A of Worksheet 4. Using the same report, (and any other pertinent reports) determine if there are any planned expansion of capacities and enter the information in Column B of Worksheet 4.

Also in the SOCIOECONOMIC SYSTEMS ANALYSIS REPORT, find information about the levels of demand predicted with direct OCS use for each of those utilities and enter the number in Column E of Worksheet 4.

Utility	Present Capacity	Planned Expansion	OCS Direct (non-labor demand) Phase 1	Phase 2	Phase 3
1. Water					
a. source					
b. distribution system					
2. Sewer					
a. treatment					
b. distribution system					
3. Electricity Power Plant					
4. Solid Waste					
a. land fill or compaction plant					
b. collection system					
5. Telephone System					

Using the TRANSPORTATION SYSTEMS ANALYSIS REPORT, and any other recent studies or plans, identify for each potential site, potential site, potential congestion of community port or airport due to OCS activities, and if expansion is planned. Enter data on Worksheet 6.

Site A:

Site B:

Site C:

PHASE _____

1. LOCATION WORKSHEET

INDUSTRY REQUIREMENTS:

Which locations in area meet industry requirements?
BLM, PETROL. DEVELOPMENT. SCENARIO REPORT

		Check Full	Partial
A.	_____	___	___
B.	_____	___	___
C.	_____	___	___

FROM FIELD WORK: For each possible site, summarize issues involved.

Describe: Site: _____

Adequacy of Potable Water _____
Land Controls, Describe _____
Adequacy of Airstrip _____
Adequate Water Port _____
Road Connections _____
Gravel _____
Ownership of Land _____ _____
Actors Involved (Vill, Corps, etc.) _____
Willingness of Community to Share _____

List pros & cons of each potential site.
Site: _____

_____
_____
_____
_____
_____

PHASE _____

Location
Page 2

Select location for analysis based upon pros and cons. Decide which site location will be most likely and proceed with analysis. In many, instances, more than one site will look likely and each should be analyzed separately.

SITE FOR ANALYSIS _____

DIRECT IMPACTS:

For selected site determine direct impacts. Circle all that apply:

		Direct Impacts
• Is site in or adjacent to community?	No____	
	Yes____	
If "yes" and phase is Exploration, (circle)		A1 and A7
If "yes" and phase is Development, (circle)		Cl and 07
If "yes" and phase is Production, (circle)		B1 and C7
• Is community land used for OCS site?	No ____	
	Yes ____	
If "yes" will there be:		
Competing users and congested area (circle)		C3
Either some competing uses or some congestion (circle)		B3
No competing uses, uncontested area (circle)		A3
If "no" is site in or near subsistence hunting of fishing area or commercial fishing area?		
	No ____	
	Yes ____	
If "yes" and phase is Development		C3
If "yes" and phase is Production		B3

PHASE _____

Location
Page 3

DIRECT IMPACTS

- Is site greater than 5 miles outside community?

No ____
Yes ____

If "yes" and phase is Exploration	A8
If "yes" and phase is Development	138
If "yes" and phase is Production	C8
If "yes" and likely to be road-connected in exploration phase	A1
If "yes" and likely to be road-connected in development phase	C1
If "yes" and likely to be road-connected in production phase	B1

ALL PHASES _____

COMMUNITY _____

2. EMPLOYMENT WORKSHEET

As background from Literature Guide: Note current labor force data: _____ year.

a) population
b) total employment
c) unemployment
d) discouraged workers
(% with OCS skills)

Note Industry Labor Force Requirements on shore:

	Phase 1	Phase 2	Phase 3
a) exploration only			
b) low find			
c) medium find			
d) high find			

Seryice base type _____

FROM FIELDWORK: Determine ability and willingness of local labor to take OCS jobs.

INTERVIEW:

Manpower office personnel and recent employers who have built something locally (housing or other buildings).

What are the characteristics of the labor force in general profile terms?

Skill levels _____

Constraints on participation _____

What are the problems with people getting jobs today?

_____

_____

_____

_____

From Field Guide, p. _____

For short term jobs, (2-3 years), and long term jobs there will be according to:

INFORMANT 1	INFORMANT 2	INFORMANT 3	INFORMANT 4	INFORMANT

What percent of people:

A. Currently employed who would be likely to take OCS jobs?

Short term:					
Long term :					

B. Currently unemployed and looking for jobs who would be likely to take OCS jobs?

Short term:					
Long 'term :					

C. Currently unemployed and not looking for jobs who are likely to take OCS jobs?

Short term: _____ _____ _____ _____ _____

Long term : _____ _____ _____ _____ _____

Synthesize information from informants to estimate the following:

	Short Term	Long Term
A. Percent of currently employed who will take OCS jobs.	%	%
B. Percent of unemployed who are looking for work who will take OCS jobs.	%	%
C. Percent of unemployed who are not looking for work who will take OCS jobs.	%	%

ESTIMATES FROM TABLE ARE NOW USED AS INPUTS TO SCIMP.

EXAMINE OUTPUT FROM SCIMP:

Find percent local employed labor force employed in OCS by year. (variable code SBROBKF1)

Phase		Site A	Site B	Site C
1. Exploration	Maximum Percent Shown	%	%	%
2. Development	Maximum Percent Shown	%	%	%
3. Production	Modal Percent Shown (most frequent)	%	%	%

Is percentage less than 3% A2

between 3% and 10% B2

greater than 10% C2

3. INMIGRATION WORKSHEET

ALL PHASES

FROM LITERATURE GUIDE:

Determine industry need for housing in peak year of phase. Units _____

Determine housing supply: Field Guide, p. _____.

For each site at each phase determine the "mix" using fo lowing dec sion tree. Enter decision on Table A.

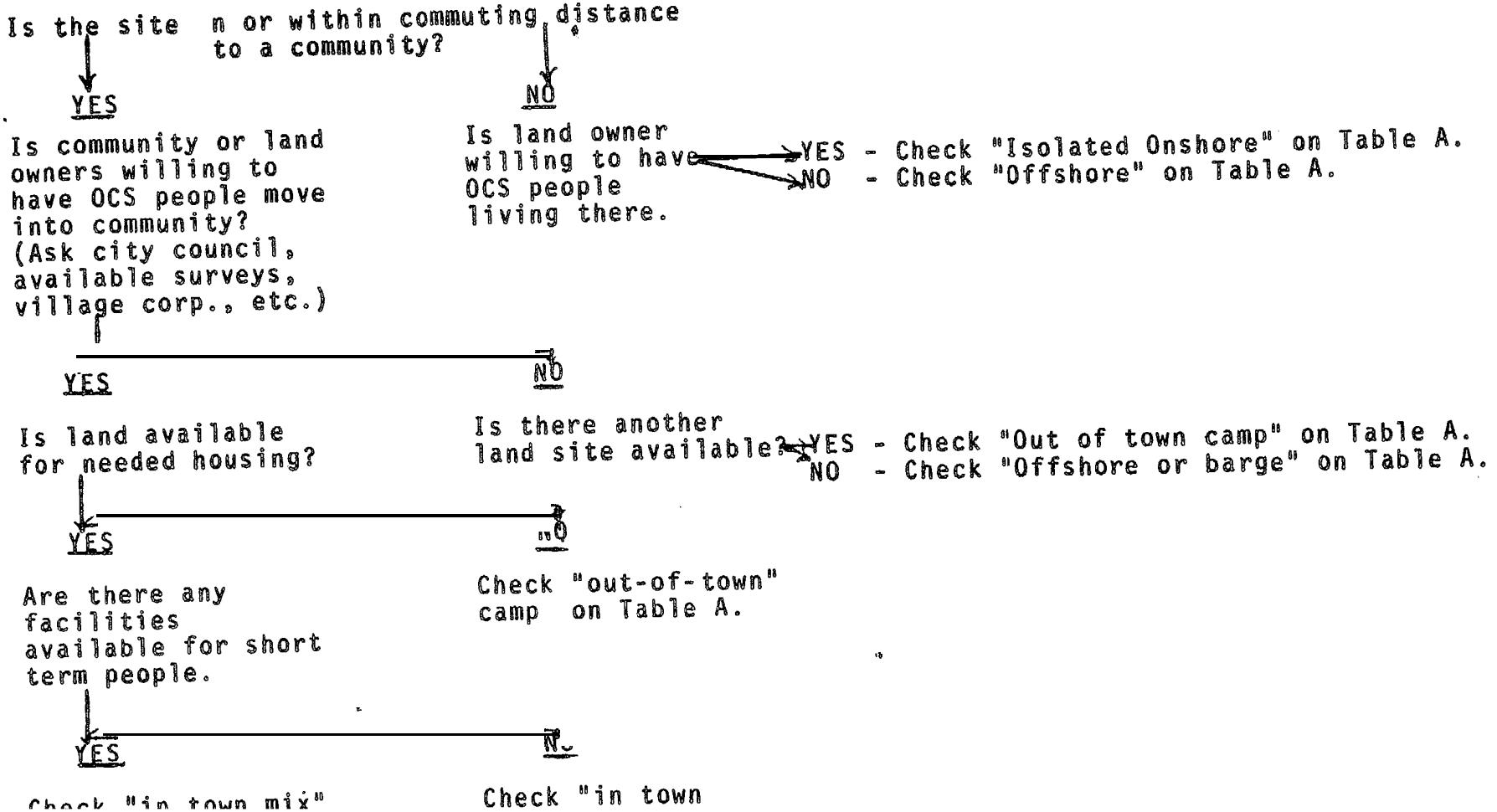

TABLE A

	SITE A			SITE B			SITE C		
	EXP	DEV	PRO	EXP	DEV	PRO	EXP	DEV	PRO
In-town mix									
In-town camp									
Out-of-town camp									
Offshore or barge									
Isolated on-shore									

TABLE INFORMATION INPUT TO SCIMP

FROM SCIMP, GET FOR EACH PHASE:

Maximum cumulative percent increase in local resident (non-camp) population. (variable code PDRESPOP).

Phase 1 - Exploration

Maximum increase in population

Site A: _____%
Site B: _____%
Site C: _____%

IF ≥50% C9
IF 15-50% B9
IF 0-15% A9
IF <5% C12
IF 3-5% B12
IF <3% A12
IF ≥ 25% C6
IF 15-25% B6
IF < 15% A6

Phase 2 - Development

Maximum Increase in Population

Site A: %____
Site B: %____
Site C: %____

IF	≥ 50%	C9
IF	15 - 50%	B9
IF	0 - 15%	A9
IF	< 5%	C12
IF	3-5%	B12
IF	< 3%	A12
IF	≥ 25%	C6
IF	15 - 25%	B6
IF	< 15%	A6

Phase 3 - Production

Maximum Increase in Population*

Site A: %____
Site B: %____
Site C: %____

IF	≥ 50%	C9
IF	15 - 50%	B9
IF	0 - 15%	A9
IF	< 5%	C12
IF	3-5%	B12
IF	< 3%	A12
IF	≥ 25%	C6
IF	15 - 25%	B6
IF	< 15%	A6

*For production phase use most frequently forecast percent from SCIMP output, rather than maximum.

4. UTILITIES WORKSHEET

UTILITY	A. PRESENT CAPACITY[1]	B. PLANNED EXPANSION[1,2]	SCIMP VARIABLES BASD C. BASE-LINE DEMAND[3]	OCSDA D. DEMAND w/OCS INMIGRATION[3]	OCSDB E. DEMAND w/ DIRECT OCS USE[1]	F. YES / NO WILLINGNESS O COMMUNITY TO S
WATER						
4 {A. Source B. Distribution						
SEWER						
4 {A. Treatment B. Distribution						
ELECTRICITY						
SOLID WASTE						
4 {A. Landfill B. Collection System						
TELEPHONE						

SOURCES:
1) BLM Socioeconomic Systems Analysis.
2) Field
3) SCIMP
4) Use Most Critical

For each utility that is yes in column F:

$$\frac{D + E}{A + B} = \text{percent capacity}$$

Count number of utilities over 80% capacity = _____

If sum = 0-1 A5
2-3 B5
4-5 C5

SITE _____
PHASE _____

5. CAMP USE OF SERVICES & COMMUNITY BARS AND STORES WORKSHEET

If it has been determined on inmigration table that there is an in-town or out-of-town camp or isolated or barge base.

Determine if community and industry will allow camp (or barge) personnel access to community services, bar and stores:

FIELD WORK: Ask community leaders for attitudes.

If NO	A10	A11
If YES		

FROM SCIMP find number of camp employees for the phase. _____
(variable SCHMPOP, Table 1)

Are camp employees < 5% of total population?	B10	B11
> 5%	C10	C11

SITE _____
PHASE _____

6. TRANSPORTATION WORKSHEET

A. If the present or planned local airport runway meets industry requirements (paved 5,000 ft.), then the impact is an increase in congestion for passenger traffic as follows:

Base Passenger Traffic _____ maximum OCS Passenger Traffic _____
(variable OCSDB for air passengers)

Maximum % increase in traffic _____
(variable DDB for air passengers from SCIMP outputs)

	Check One
0-10% small impact	_____
11-30% significant impact	_____
30% high impact	_____

Note from Literature Guide if airport congestion is expected _____YES _____NO

If the airport is not sufficient, and one would be built by the industry, then _____small impact. If no planned expansion or new airport then _____high impact.

Note from Literature Guide if dock and harbor is expected to be congested
_____YES _____NO

B. If the dock and harbor is not congested and project OCS use is small (e.g., 1-2 rig service boats), or the oil company builds a separate dock, then _____ small impact.

If the dock and/or harbor is partly or will be partly congested, then even a small OCS impact is significant _____.

If an oil terminal is built near the present dock or harbor, then high impact. _____.

C. If the OCS facility traffic does not cross town or a sensitive part of town to go to the dock or airport, or if OCS traffic is a small part of total traffic, then _____ small impact.

If it only *crosses* a sensitive part of town, then _____ significant impact.

If it passes through a main street of town, and present total traffic is small, then _____ high impact.

D. Summarize the impacts as follows:

0-1 significant and no high impacts -	A4
2-3 significant or 1 high impact -	B4
2-3 high impacts	C4

APPENDIX G

APPLICATION OF THE MODEL TO NOME AND UNALASKA

APPENDIX G: *APPLICATION* OF THE MODEL

I. INTRODUCTION

This appendix presents the results of the tests of the Enclave Model. Two communities, Nome and Unalaska, were selected for test runs of the mode. Field work in Nome was conducted during the week of March 15, 1982, by Jane Angvik. The fieldwork in Unalaska took place from April 28 to May 4 and was conducted by Gunnar Knapp. The time between the two field trips was used to modify the SCIMP model so that field work results could be entered as inputs to SCIMP.

II. NOME TEST CASE

A. The Worksheets

The actual worksheets are not well-suited to presentation of the information for purposes of this report. Therefore we will present the information in narrative form but following the order and categories of the worksheets.

1. Location

The literature on Nome and Norton Sound indicated two probable sites for a support base, Nome and Cape Nome. The fieldwork, however, showed that a third possibility of using barges and gravel islands was being discussed and seemed to be an increasingly stronger possibility. Thus we decided to run the model for the three sites: Nome, Cape Nome and Barges/Gravel Islands. *Each site* likely would constitute a "partial" rather than "full" support base and each would have air support at Nome.

a. Industry Requirements

From the fieldwork we determined in the case of Nome that there was adequate potable water, that city zoning is just beginning through the city and Coastal Zone Management, the airstrip is adequate and there are plans to build a two mile long

dock to deep water. The road connections necessary are adequate. Nome would need gravel from Cape Nome to build the dock. Ownership of the available land involved is in the hands of the gold company or the village corporation. The major actors involved are the city, the gold company and the village corporation. There is a strong willingness on the part of the community to share facilities with OCS industry.

In the case of Cape Nome a "camp" type facility would have to be built. There is no potable water and water would have to be brought from the city of Nome. There are no city land controls but perhaps regional land controls will come in the near future and would be more stringent than city controls. There is no airstrip and we assume development at Cape Nome would use the Nome airport, which is adequate. There is no dock at present but Cape Nome has deep water. There will need to be an access road from the northside of Nome and extending to the site. Cape Nome has plenty of gravel for all industry needs. Surface ownership of the land at Cape Nome belongs to the village corporation and the regional corporation owns subsurface rights. The major actors involved are the village corporation and the regional corporation. Our interviews indicate a willingness of the actors involved to have OCS development locate at Cape Nome and a willingness of the City of Nome to share community facilities, roads and utilities with a Cape Nome development.

The desire to minimize costs during the exploration phase indicates that the use of gravel islands in deep water with a service base on barges is a strong possibility. In this case, potable water would have to be transported from Nome. Land and planning controls would be in the hands of CZM. The airport at Nome would be adequate for aviation needs.. The issues of road connections and deep water port are inapplicable. The source of gravel would be at Cape Nome. Owner of the land from shore to the three-mile limit is the State of Alaska and the actors involved would be the State and CZM. There seems to be an equal willingness on the part of the City of Nome to share water, airport facilities, etc.

b. Pros and Cons

Nome

Pro: Community wants the development and will make accommodations to have it.

Con: Not enough land available for development in town. Access to deep water is dependent upon $35 million port development. Needs legislative appropriation.

Cape Nome

Pro: Much vacant land and few controls.

Con: For exploration phase will need to build a road to the site. Dock must be built.

Barges

Pro: Industry is very interested in the low cost capital investment during exploration associated with an off-shore base. This is the most probable location for the exploration phase.

c. Direct Impacts: Exploration Phase

Barges Case: The site is not in or adjacent to the community nor will significant community land be used for an OCS site. The site is in a hunting and fishing area (effect B3) and is likely to be greater than 5 miles outside community (effect A8).

Nome Case: The site would be in the community (effects A1 and A7) and there would be some competing users (effect C3).

Cape Nome Case: The site is some distance from the community and is not road-connected at present. There are no obvious competing uses and it is presently an uncontested area, however, the site is in a traditional subsistence area (effect B3) and is greater than 5 miles outside the community (effect A8), and it is likely to be road-connected during this phase (effect A1).

d. Direct Impacts: Development Phase

Barges Case: During this phase some community land would be used for OCS and some competing uses and congestion would be present but islands and barges would continue to be near hunting and fishing areas (effects C3). The site is greater than 5 miles away from the community in the development phase (effect B8).

Nome Case: In or adjacent to the community in development phase (effects C1 and B7) with competing users and congestion (effect C3).

Cape Nome Case: Site is near hunting and fishing area (effect C3), is greater than 5 miles outside the community (effect B8 during development phase) and is likely to be road connected (C1).

e. Direct Impacts: Production Phase

Barges Case: It is likely that community land will be used during this phase with some competing uses and congestion (effect B3). This site is more 5 miles outside the community in the production phase (effect C8).

Nome Case: In this case the effects determined largely by phase are (B1 and C7) and high congestion (C3).

Cape Nome *Case:* Cape Nome is outside the community but near subsistence area in this phase (effect B3). Other effects are determined by distance and phase (effects C8 and B1).

2. Employment

The labor force lacks skills complementary to the OCS industry. There is a lack of skilled carpenters, plumbers and electricians Key informants cited alcohol abuse as the major constraint on participation in the labor force. The major problems mentioned in people getting jobs today were the mismatch of skills, alcohol abuse and seasonal attrition due to participation in subsistence activities.

The following figures were determined based on fieldwork discussions with knowledgeable informants. They were used as inputs to SCIMP and must be considered assumptions based upon available information rather than computed estimates.

Percent of Permanent Residents Who Would Take OCS Jobs If Available

	Already Employed	Unemployed	Not in Labor Force
Barges Case:			
Short-term jobs	20	10	1
Long-term jobs	30	15	1
Nome Case:			
Short-term jobs	30	10	1
Long-term jobs	50	15	1
Cape Nome Case:			
Short-term jobs	25	10	
Long-term jobs	40	15	

The outputs of the SC IMP run (see Table 2 of SC IMP run for each case) were examined and entered in the following table. Next to the percentages are the direct effects in parenthesis:

Percent of Local Labor Employed in OCS by Phase
(SCIMP variable SBROBLF1, Table 2)

Phase	Barges	Nome	" Cape Nome
I. Exploration (Maximum % shown)	o% (A2)	1% (A2)	O% (A2)
II. Development (Maximum % shown)	12% (C2)	15% (C2)	12% (C2)
III. Production (Mode percentage)	4% (B2)	5% (B2)	4% (B2)

The direct effects based on employment estimates are determined by the range in which the percentage falls. The following ranges were used on our worksheet (Worksheet 2: Employment):

Less than 3 percent	Effect A2	"Little use of local labor relative to the local work force"
Between 3 & 10 percent	Effect 1%2	"Moderate use of local ' labor relative to the local work force"
Greater than 10 percent.	Effect C2	"Significant use of local labor force"

It was our judgment that these ranges constituted proper cutoffs for what we felt was "little", "moderate" or "significant" use of local labor. They are, by their nature, arbitrary and users might find reasons to change the ranges used.

In summary, we found that in the Nome area test case, regardless of which site is picked, the direct impact on the local labor employed varied consistently with the phase of OCS activity. The greatest impact on labor will be during development and the exploration phase should have the least effect.

3. Immigration and Housing

Worksheet 3 provides a guide to determining the housing supply and consequently the type of "mix" between newcomers living in town, living in camps, etc. The type of housing mix determined for the three sites in the Nome area are provided in the following table taken from worksheet 3 and used as inputs to SCIMP:

Housing of Employees	Nome		Cape Nome		Barges	
	Exp.	Dev/Prod.	Exp.	Dev/Prod.	Exp.	Dev/Prod
In-town mix	X		X			
In-town camp		X				
Out-of-town camp						
Offshore or Barge					X	X

The type of housing for each site and stage of development was entered into the SCIMP model to produce, among other things, the percentage increase in the resident population due to OCS as a share of the base case population (see variable PDRESPOP, Table 1 of SCIMP Outputs]. The outputs for each site and phase are presented below:

Maximum Cumulative Fractional Increase in Local Resident Noncamp Population

(SCIMP Outputs: Table 1, Variable PDRESPOP)

Case and Phase		Direct Effects
Barges:		
Exploration	0	A9, A12, A6
Development	10	A9, C12, A6
Production	11	A9, C12, A6
Nome:		
Exploration	1	
Development	21	
Production	22	
Cape Nome:		
Exploration	0	
Development	12	
Production	13	

As in the case of direct impacts on employment, the direct impacts upon the use of services (A6, B6, C6), immigration of new residents (A9, B9, C9), and the use of local hunting and fishing areas by newcomers (A12, B12, C12) are determined by the use of ranges in the percent increase in the resident population. The ranges we used (see Worksheet 3: Immigration) are as follows:

Increase in Resident Population Due to OCS as Share of Base Population

(SCIMP variable PDRESPOP)

Immigration of New Residents		Use of Hunting/Fishing Areas	
>50%	C9	>5%	C12
15 - 50%	1%9	3 " 5%	B12
0 - 15%	A9	0 - 3%	A12

Use of Services	
25%	C6
15 - 25%	B6
0 - 15%	A6

4. Utilities

Actual capacity figures for utilities were not used in the SCIMP run. Instead, a summary variable (1,000,000) was chosen in order to run the model. For the test run the actual computation (demand with OCS immigration plus demand with direct OCS use as a proportion of present capacity plus planned expansion) was done by hand. In this way we determined that four *utilities* in Nome would likely be over 80 percent of capacity in each phase for Nome and Cape Nome if no additional capacity were provided (effect C5).

5. Camp Use of Services

In our discussions with community leaders in Nome we determined it was highly likely that the community and industry would allow the camp or barge personnel access to community services, bars and stores. However the lower access for barge-base employees reduced the impact rating for that case.

Camp Employees as Percent of Total Population
(SCIMP variable SCAMPOP, Table 1)

	Barges	Nome	Cape Nome
Exploration	3% (B10,B11)	2% (B 10, B11)	2% (B10, B11)
Development	14% (B 10, B11)	12% (C10, C11)	4% (B10, B11)
Production	5% (B10, B11)	5% (C10, C11)	5% (C10, C11)

6. Transportation

During the test run we found that the transportation worksheet as originally designed was not usable. It has been changed and should be workable in its present form. Nevertheless, for the test run in Nome it was obvious that there would be only a small impact on the present capacity of the airport (effect A4).

B. Direct Impact Profiles

We have now identified all of the direct impacts associated with each phase for each site. Below is *a* profile for summary and comparative purposes.

Barges			Nome			Cape Nome		
Exp.	Dev.	Prod.	Exp.	Dev.	Prod.	Exp.	Dev.	Prod.
-			A1	cl	B1	Al	C1	B1
A2	C2	B2	A2	C2	B2	A2	C2	%2
B3	C3	B3	C3	C3	C3	B3	C3	%3
A4	A4	A4	A4	A4	A4	A4	A4	A4
C5	C5	C5	C5	C5	C5	C5	C5	C5
A6	A6	A6	A6	B6	B6	A6	A6	A6
-	-	-	A7	B7	C7			
A8	B8	B8	-			A8	B8	C8
A9	A9	A9	A9	A9	A9	A9	A9	A9
B10	C10	C10	B10	C10	C10	B10	B10	C10
B11	C11	C11	B11	C11	C11	B11	B11	C11
A12	C12	C12	A12	C12	C12	A12	C12	C12

To make sense of the coding scheme the user might want to make a table of direct impacts for a particular site in a given phase. It would be cumbersome to provide such a table for all nine profiles here. It would be even more cumbersome to provide a listing in this report of all the indirect impacts for all nine situations here. Rather, we will focus on *one,* the use of barges during the exploration phase, by way of an example.

TABLE OF DIRECT IMPACTS

Area: Nome
Site: Barges/Gravel Islands
Phase: Exploration

Local Economy (City of Nome)	No use of local suppliers and contractors.
Local Labor Force	Little use of' local labor relative to the local (Nome) workforce.
Land L9se Patterns	Some "land" use conflicts, in this case due to conflicts with traditional hunting areas.
Transport Facilities	Increase use of some or all facilities (Nome airport) but no serious congestion.
Public Utilities	Four or five utilities are approaching capacity due to sharing water, etc. with OCS.
Community Services	Increased use of some service (police, fire, medical) but none are over capacity.
Local/Regional Tax Base	Little increase in potential tax base outside community.
Presence of Newcomers	Low immigration of new residents to Nome.
	Moderate use of community services by employees living in camps (e.g., barges).

Moderate use of bars and stores by employees (passing through town).

Little use of local hunting and fishing areas by newcomers.

C. Indirect Impacts

A number of possible indirect impacts are linked to each direct impact and there is necessarily some overlap with a given indirect impact linked to more than one direct impact. For purposes of illustration in this test case we will present the indirect impacts provided by the model for the case of using barges during the exploration phase.

Indirect Impact-s Association with Use of Barges as Support Base During Exploration in Nome Area

Little Use of Local Labor (A2)

Small increase in rate of alcohol and drug abuse
Slightly increased access to subsistence technology due to wage income
Slight change in working groups for hunting, fishing or trapping,
Increase in perception of economic disparity.
Increased contact with outside world.
Small increase in job competition with newcomers.
Skill levels of local labor increase slightly.
Small increase in employment in services, construction, and transportation.
Local firms and government experience small increase in employee turnover.
Slight increase in income differentials.
Small increase in community income.
Increase in local inflation rate.
Small increase in business operating costs (rent and labor).
Slight increase in new businesses purchased by outsiders.

Some Land Use Conflicts (B3)

(Note: conflicts in this case are at sea and many below do not apply)

People relocate due to dissatisfaction with community.
Increased political power of land-owning village and native corporations.
Decrease in satisfaction with visual appearance of community.
Increase in local inflation rate.
Decrease in real value of fixed incomes.
Increased business operating costs.
Cost-price squeeze in existing primary industries (such as fishing).
Property value increase.
Land speculation increases.
Increase in land purchased by outside investors.
Increase in racial and cultural tensions.

Increase Use of Some or All Transportation Facilities but No Serious Congestion (A4)

Increased perception of community as impersonal.
Increased in perceived pace of life in community.
Increased contact with outside world.
Small increase in rate of alcohol and drug abuse.
Small increase in local government employment.

Four of Five Utilities at Capacity Due to Sharing. (C5)

Increase in satisfaction with community due to new or expanded facilities and services.
Newcomer dissatisfaction with local stores and services.
Increased perception of community as impersonal.
Expectation of new wealth by local people.
Increase in perceived pace of life in *community.*
Increase in local government employment.
Increased demand for services.
Increase in property tax rate as public facilities expand.

Moderate Increase in Use of Bars and Stores by Employees Living in Camps (B11)

Mental health needs increase.
Change in crimes against property and person.
Change in rate of alcohol and drug abuse.
Change in rate of family disturbance and child behavior problems.
Increase in concern about safety.
Increase in racial and cultural tensions.
Strain on courts and police.
Rise in traffic accidents.
Newcomer dissatisfaction with local stores and services.
Increased perception of community as impersonal.
Expectation of new wealth by local people.
Increase in perceived pace of life in community.
Television, books and magazines become more common.
Increase in employment in services, construction and transportation.
Increase in community income.
Increase in local inflation rate.
Decrease in real value of fixed incomes.
Businesses expand in anticipation of increased demand.
New businesses are established.
Increase in goods and services available.
New and expanded industries become dependent on oil revenue.
Local economic recessions occur following peak periods.
Relative decrease in importance of existing Primary industries.
Increase in businesses purchased by outsiders.
Property values increase.
Land speculation increases.
Increase in land purchased by outside investors.

Limited Increase in the Use of Local Hunting and Fishing Areas by Newcomers (A12)

Mental health needs increase.
Small increase in crimes against property and person.
Increase in racial and cultural tensions.
Stain on courts and police.
Increased concern and community actions about protection of subsistence resources/lifestyle.

Increase in competition with sportsmen for subsistence resources.
Time and personnel required to govern increases.
New facilities required.
More opportunity for shared investment.
Large increase in expenditures prior to revenue increase.
Large increase in debt financing and bonding of public Infrastructure.
High facility maintenance expenditure following peak activity.
Decrease in satisfaction with community due to overburdened facilities and services.
Increase in satisfaction with community due to new or expanded facilities, services.
Increase in perceived pace of life in community.
Increase in local government employment.
Increase in property tax rate as public facilities expand.
More planning and impact studies needed.

Increased Use of Some or All Services But None are Over Capacity (A6)

New services may be requested.
Small increase in medical emergency transportation demand.
Small increase in potential for industry support of community health services.
Possible decrease in traditional means, such as suasion of kinship group leaders, in settling disputes.
Increase in perceived pace of life in community.
Small increase in local government employment.

Little Increase in Potential Tax Base Outside Community (Regional) (A8)

Possible annexation or creation of new types of government (e.g., boroughs].
Possible increase in tax revenues.

Low Immigration of New Residents (A9)

Note: Although the test case fell within the low category, 0-15% increase, the actual figure was 0%. Thus, there are no impacts due to immigration of new residents.

Moderate Use of Community Services by Employees Living in Camps (B10)

People relocate due to dissatisfaction with community.
Increase in turnover of officials and public employees.
Change in expectation of government performance.
New facilities required.
Over capacity of *services* following peak activity.
Increase in expenditures prior to revenue increase.
Increaseindebt financing and bonding of public infrastructure.
High facility maintenance expenditure following peak activity.
More medical personnel needed.
Medical personnel turnover increases.
Limited facilities are burdened.
New facilities and technology available.
Change in structure of health care delivery system.
Increase in medical emergency transportation demand.
Mental health needs increase.
Administrative and planning demands increase.
Decrease in role of kinship groups in settling disputes.
Increase in formal community functions.
Decrease in satisfaction with community due to overburdened facilities and services.

III. UNALASKA TEST CASE

This section discusses the items on the Enclave model worksheets, based on fieldwork from April 28 to May 4, 1982. We have retained the subject order of the worksheets (Location, Employment, Immigration and Housing, Utilities, and Transportation). The SCIMP results referred to are presented in "Unalaska SCIMP Runs for Enclave Model". This memorandum also discusses the four case studies (Unalaska Enclave/Bottomfish, Unalaska Enclave/No Bottomfish, Makushin Enclave/Bottomfish, and Makushin Enclave/No Bottomfish.

1. Location

An onshore base for OCS development might or might not be located at Unalaska. OCS studies to data, including the St. George Basin Draft Environmental Impact Statement, have not studied scenarios that included the location of a base other than an exploration phase marine support base at Unalaska. The justification for this appears to be that given in Tremont (1981): "Harbor facilities for OCS activities could be leased and/or constructed at Dutch Harbor. However, such an effort may be at conflict with an expanding fishing industry over the area's small amount of developable land. Additionally, the airfield at Dutch Harbor cannot handle large jet aircraft and would have to undergo a major renovation to do so. Because of these and other limitations, it is expected that any support and facility located at Dutch Harbor would be limited to the role of marine support" (page 16). Of the scenarios discussed in the Draft Environmental Impact Statement, the one with the greatest impact on Unalaska involves the establishment of a base at Makushin Bay on the west side of Unalaska Island, which has no road connection with Unalaska. This scenario involves the location of a marine support base at Unalaska for the exploration phase only, with projected onshore employment of 30 for a five-year period.

However, discussions with the city planner for Unalaska as well as personal observations indicate that developable land does exist--enough to support both an expanded fishing industry and an oil industry. If there were a conflict between land for fishing industry development and land for oil development, oil might very well win. There are plans to expand the airfield at Unalaska, which may or may not be realized, depending on funding. It would

probably be considerably cheaper for industry to establish a base at Unalaska than at Makushin Bay. Therefore, this alternative should *also* be considered.

Rather than attempt to predict which is actually the most likely location for a base, the impacts of both a Makushin base and an Unalaska base will be considered.

a. Industry Requirements

The Makushin site has an excellent harbor but little else. All facilities would need to be developed, including an airstrip. It appears likely that land could be obtained from either Native of government owners. There are no road connections.

The Unalaska site would have a good harbor. It might have a good airport, depending on expansion. It could be subject to some land controls, but the town does not appear to be sufficiently up-in-arms about OCS development to come up with excessively restrictive controls. Land would most likely be purchased or leased from the Unalaska Village Corporation, which would probably provide it at some price. Apparently, Hog Island (in Unalaska Bay) has been or is about to be purchased by a consortium of companies for a support base. Potable water could be found although a water delivery system does not exist for much of the developable land.

b. Pros and *Cons*

Makushin

Pro: Least impact upon Unalaska. Land probably cheaper.

Con: More expensive to develop. No existing facilities.

Unalaska

Pro: Parts of the community welcome development. Facilities exist or may be provided.

Con: Impact upon Unalaska is much greater environmentally socially, and economically.

c. Direct Impacts: Exploration Phase

Same effects for both Makushin and Unalaska cases since exploration wouldbe based at Unalaska. Site would be in or adjacent to community (A7, A1) with some competing uses and congestion (effect B3).

d. Direct Impacts: Development and Production Phases

Makushin Case: Not adjacent to community, no community land use; not road connected; site is in fishing area (effects; C3 in development, B3 in production, A8, A1 in both).

Unalaska Case: (1) Site might be adjacent to community, using some community land, resulting in competing uses and congested area (effects C1, C3, B7 in development, B1, C7, C3 in production).

(2) Alternatively, site might be road connected at greater than five-mile distances but less than ten (effects B8, C1 in development, C8, B1 in production).

Note: Model for test case will be run with option (1).

2. Employment

There is relatively low unemployment in Unalaska. Employment is available in fish processing for residents although most fish processing jobs are filled by workers from Seattle who leave when there is no work to be done. The relatively small number of permanent residents who might not leave if they wanted to work but could not find a job are mostly Natives. A number of Natives hold jobs working for the Unalaska Corporation. There are relatively few permanent residents with skills who are not

connected with the fishing industry. The biggest constraint to participation would be lack of desire to work and mismatch of skills with oil industry positions.

The following SCIMP inputs were developed based on field-work discussions. They are guesses rather than technical estimates.

Percent of Permanent Residents Who Would Take OCS Jobs if Available

	Already Employed	Unemployed	Not in Labor Force
Makushin Case:			
Short-term jobs	.05	.1	.01
Long-term jobs	.1	.1	.025
Unalaska Case:			
Short-term jobs	.2	.4	.04
Long-term jobs	.4	.4	.1

(These are variables P1-P6 in the SCIMP model).

The outputs of the SCIMP run were entered in the following table provided on the Employment worksheet. Direct impact effects are entered in parentheses.

PERCENT LOCAL LABOR EMPLOYED IN OCS BY PHASE

(SCIMP Variable SBROBLF1, Table 2)

	Unalaska Bottomfish	Unalaska No Bottomfish	Makushin Bottomfish	Makuskin No Bottomfish
I. Exploration (max % shown)	4% (B2)	6% (B2)	1% (A2)	1% (A2)
II. Development (max % shown)	22% (C2)	43% (C2)	o% (A2)	1% (A2)
III. Production (modal % shown)	2% (A2)	20% (C2)	o% (A2)	0% (A2)

3. Immigration and Housing

Housing is already *very* tight in Unalaska for permanent residents. Much of existing housing is substandard. Land on which to build new homes is not currently available (landowners--mostly the Unalaska Corporation which owns 80 percent of the land in the city are not selling). If a bottomfish industry develops, the housing crunch will become even worse. Most fishing industry employees are enclave residents.

Thus, it is very likely that almost all oil company employees will live in enclave housing.

Effects of OCS Development: Direct Impacts

Maximum Cumulative Fractional Increase in Local Resident Noncamp Population

(SCIMP Outputs: Table 1, Variable PDRESPOP)

Case	Exploration	Development	Production
Makushin/ No Bottomfish	0(A9, A12, A6)	0(A9, A12, A6)	0(A9, A12, A6)
Makushin/ Bottomfish	0(A9, A12, A6)	0(A9, A12, A6)	0(A9, A12, A6)
Unalaska/ No Bottomfish	3(A9, A12, A6)	83(C9, C12, C6)	21(B9, C12, B6)
Unalaska/ Bottomfish	1(A9, A12, A6)	39(B9, C12, C6)	1(A9, A12, A6)

4. Utilities

The water, telephone, and sewage systems are already extremely overburdened and in need of upgrading, which is planned. If a bottomfish industry develops, vast expansion will be necessary. It is likely that an OCS enclave would provide all its own utilities. However, the increase in resident demand during peak OCS years in the two Unalaska cases would almost certainly result in the sewer, water, electricity, and solid waste utilities being operated at close to capacity which might well prove inadequate. This would simply worsen an already bad situation (C5).

There would be very little additional strain on utilities in the two Makushin cases (A5).

5. Camp Use of Services

The community already permits the use of bars and stores by the large number of fishing industry enclave residents. The treatment of oil industry enclave workers would not be likely to differ.

Effects of OCS *Development:* Direct Impacts

Maximum Fractional Increase in Total (Including Enclave) Population Due to OCS

(SCIMP outputs: Table 1 Variable SCAMPOP)

Case	Exploration	Development	Production
Makushin/ Bottomfish	1% (B10, B11)	1% (B10, B11)	0% (Ale, A11)
Makushin/ No Bottomfish	1% (B10, B11)	1% (B10, B11)	0% (A10, A11)
Unalaska/ Bottomfish	9% (C10, C11)	31% (C10, C11)	5% (C10, C11)
Unalaska/ No Bottomfish	10% (C10, C11)	38% (C10, C11)	14% (C10, C11)

6. Transportation

The airport is already inadequate for the town's present needs. Funding has been requested for an extension of the runway and other improvements. If these are undertaken, the extra OCS traffic, assuming Cold Bay remains the primary OCS air support base, should be manageable.

Present dock facilities are full, consequently more would need to be built specifically for OCS. ARCO's COST well exploration is currently using one dock two miles west of town on Captain's Bay. One possible area of congestion would be in marine support facilities such as refueling stations, where congestion could be increased during the exploration phase before permanent OCS facilities are established.

OCS traffic to and from an enclave would further crowd the road system. Traffic is already considered a problem in Unalaska.

A rough estimate of peak-year increases in congestion for the Unalaska Enclave/Bottomfish case is 11-30 percent for airports and road and 0-10 percent for harbor/docks (effects B4 and A4). For the Unalaska Enclave/No Bottomfish case, the effects would be greater (effects C4 and B4).

B. Summary of Direct Impacts

The profile of direct impacts for the four case options in the Unalaska test case are as follows:

Makushin Bottomfish			Makushin No Bottomfish			Unalaska Bottomfish			Unalaska No Bottomfi		
Exp	Dev	Pro	Exp	Dev	Pro	Exp	Dev	Pro	Exp	Dev	P
A1	A1	A1	A1	A1	A1	A1	C1	B1	A1	C1	B
A2	A2	A2	A2	A2	A2	B2	C2	A2	B2	C2	c
B3	C3	B3	B3	C3	B3	63	C3	63	63	C3	B
-	-	-				B4	B4	B4	C4	C4	c
A5	A5	A5	A5	A5	A5	C5	C5	C5	C5	C5	c
A6	A6	A6	A6	A6	A6	A6	C6	A6	A6	C6	C
A7	-	-	A7	-	-	A7	B7	C7	A7	B7	C
-	A8	A8		A8	A8	-	-	-			
A9	A9	A9	A9	A9	A9	A9	B9	A9	A9	C9	B
B10	B10	A10	B10	B10	A10	C10	C10	C10	C10	C10	c
B11	B11	A11	B11	B11	A11	C11	C11	C11	C11	C11	c
A12	A12	A12	A12	A12	A12	A12	C12	A12	A12	C12	C

One can see the direct impacts upon Makushin, regardless of a bottomfish industry, are rather mild, *mostly* "A" *range* impacts, several "B's" and only a few "C's". The Unalaska cases have many more significant impacts ("C's").

The indirect impacts associated with any of the twelve direct impact profiles presented above can now be ascertained by referring to the document '"Indirect Impacts Associated with Each Direct Impact" (Appendix D). For our example here, we will list the indirect impacts predicted by the model to result from the Unalaska/Bottomfish, development phase case.

Industry Uses Many Local Supplies and Contractors (Cl)

Expectation of new wealth by local people.
Large increase in *community* income.
Large increase in local inflation rate.
Decrease in real value of fixed incomes.
Many businesses expand in anticipation of increased demand.
Many new businesses are established.
Large increase in goods and services available.
New and expanded industries become dependent on oil revenue.
Local economic recessions occur following peak periods.

Increased demand for services, construction and transportation.
Relative decrease in importance of existing primary industries (such as fishing).
Large increase in new businesses purchased by outsiders.
Property values increase.
Land speculation increases.
Increase in land purchased by outside investors.

Significant Use of Local Labor Relative to Local Labor Force (C2)

Reduced outmigration of local people to urban areas.
Mental health needs increase.
Teacher turnover high and more stress.
Many more dropouts due to jobs.
Increase in rate of alcohol and drug abuse.
Increase in rate of family disturbance and child behavior problems.
Large rise in violence and alcoholism during recession periods.
Increase in number of high quality dwellings.
Increase in households living in over-crowded conditions as workforce increases.
Change in shopping pattern.
Decrease in dependence on subsistence resources for new full time employees.
Increase in importance of women in wage earner activities.
Increased access to subsistence technology due to wage income.
Decrease in amount of resources shared among village members.
Change in ways of managing cash income.
Less flexibility in timing of subsistence activities due to wage employment restrictions.
Change in working groups for hunting, fishing, trapping.
Decrease in subsistence skills passed between generations.
Decreased dependence of kinship alliances and associations,
Change in observance of festivals, rituals and customs.
Decrease in informal social interaction.
Increased conflict on individual values vs. group values.
Decrease in importance of elderly in family leadership.
Decrease in traditional male roles and authority.
Increase in authority of women in decisions.

Change in wealth redistribution patterns.
Decrease in number of extended family households.
Increase in number of single family households.
Increase in income and mobility of women.
Increase in rate of outmarriages.
Increase in perception of economic disparity.
Increase in personal mobility.
Decrease in community cohesion.
Increased perception of community as impersonal.
Increase in perceived pace of life in community.
Decreased usage of indigenous languages.
Increased contact with outside world.
Increased local labor force participation.
Increase in job competition with newcomers.
Skill levels of local labor increase.
Increase in employment in services, construction and transportation.
Local firms and government face competition for limited labor supply.
Local firms and government experience increased employee turnover.
Skills in traditional industries, such as fishing and subsistence, decline.
Increased dependence on cash income.
Increase in income differentials.
Increase in community income.
Increase in local inflation rate.
Decrease in real value of fixed incomes.
Increased income leakage to regional centers.
Increased business operating costs.
Cost-price squeeze in existing primary industries.
New and expanded industries become dependant on oil revenue.
Local economic recessions occur following peak periods.
Relative decrease in importance of existing primary industries.
Increase in new businesses purchased by outsiders.

Many Land Use Conflicts

People relocate due to dissatisfaction with community.
Increased political power of land-owning Village and Native Corporations.

Decrease in satisfaction with visual appearance of community.
Large increase in local inflation rate.
Decrease in real value of fixed incomes.
Large increase in business operating costs.
Cost-price squeeze in existing primary industries.
Property values increase significantly.
Land speculation increases.
Large increase in land purchased by outside investors.
Increase in racial and cultural tensions.

One to Three Transportation Facilities are Congested Due to Shared Use (B4)

People relocated due to dissatisfaction with community.
Time and personnel required to govern increases.
New facilities required.
More opportunity for shared investment.
Increase in expenditure prior to revenue increase.
Increase in debt financing and bonding of public infrastructure.
High facility maintenance expenditure following peak activity.
Rise in traffic accidents.
Decrease in satisfaction with community due to overburdened facilities and services.
Increase in satisfaction with community due to new or expanded facilities.
Increase in perceived pace of life in community.
Increase in local government employment.
Increase in property tax rate of public facilities expand prior to increase *in* tax base.
More planning and impact studies needed.

Four of Five Utilities are at or Over Capacity Due to Sharing *(C5)*

Time and personnel required to govern increases.
New facilities required.
More opportunity for shared investment.
Large increase in expenditures prior to revenue increase,
Large increase in debt financing and bonding of public

infrastructure.
High facility maintenance expenditure following peak activity.
Decrease in satisfaction with community due to overburdened facilities and services.
Increase in satisfaction with community due to *new or* expanded facilities, services, stores.
Increase in perceived pace of life in community.
Increase in local government employment.
Increase in property tax rate as public facilities expand.
More planning and impact studies needed.

Two or Three Services are at or Over Capacity Due to Sharing (C6)

People relocate due to dissatisfaction with community.
More planning and impact studies needed.
Time and personnel required to govern increases.
New services demanded.
Over capacity of services following peak activity.
More opportunity for shared investment.
Increase in expenditures prior to revenue increase.
Increase in debt financing and bonding of public . infrastructure.
High facility maintenance expenditure following peak activity.
More medical personnel needed.
Medical personnel turnover increases.
Limited facilities are burdened.
New facilities and technology available.
Change in structure of health care delivery system.
Increase in medical emergency transportation demand.
Increase in potential for industry support of community health services.
Decrease in role of kinship groups in settling disputes.
Decrease in satisfaction with community due to new or expanded facilities, services and stores
Increase in perceived pace of life in community.
Increase in local government employment.
Increase in property tax rate if public facilities expand prior to tax base increase.

Some Increase in Community Tax Base

More planning and impact studies needed.
Possible increase in tax revenues.
Increase in public goods and services available.
Decrease in property tax rate as tax base increases.

Moderate Immigration of Residents (B9)

Moderate change in population composition (age, race, sex).
Large population decrease following construction and production phases.
Annexation or creation of new types of government (e.g., boroughs).
Moderate increase in turnover of officials and public employees.
Moderate increase in newcomers involved in government.
Change in expectation of government performance.
More planning and impact studies needed.
Time and personnel required to govern increases.
Public participation increases.
New services demanded.
Increase in perception of political powerlessness by some community members.
Decrease in kinship-based authority.
Mental health needs increase.
School enrollment exceeds capacity.
More teachers and rooms needed.
Teacher turnover higher and more stress.
Change in curriculum requested by newcomers.
Administrative and planning demand increase.
Conflicts increase between students.
More adult education provided.
Congregations increase and build more churches.
New denominations appear.
New social service functions appear *in* churches.
More prosletyzing occurs.
Increase in conflicts within congregations.
Increase in crimes against property and person.
Increase in rate of alcohol and drug abuse.
Increase in rate of family disturbance and child behavior problems.

Increase in concern about safety.
Increase in racial and cultural tensions.
Strain on courts and police.
Rise *in* traffic accidents.
Increase in competition for housing.
Increase in prevalence of' substandard dwellings.
Increase in number of high quality dwellings.
Increase in households living in over-crowded conditions as workforce increases.
Rapid increase in housing costs as local workforce increases.
Change in orientation from self-care to professional care.
Change in way of doing business.
Change in shopping patterns.
Decreased dependence on kinship alliances and associations.
Non-kin common interest associations increase.
Decrease *in* perception of community of cohesive society.
Change in observance of festivals, rituals and customs.
Increased pride in cultural heritage.
Decrease in role of kinship groups in settling disputes.
Increase in formal community functions (e.g., school board meetings].
Increased conflict of' individual values vs. group values.
Decrease in importance of elderly in family leadership.
Decrease in traditional male roles and authority.
Increase in authority of women in decisions.
Decrease in number of extended family households.
Increase in number of single family households.
Increase in number of female heads of households.
Increase in rate of outmarriages.
Increase in perception of economic disparity.
Decrease in community cohesion.
Newcomer dissatisfaction *with* local stores and services.
Increased perception of community as impersonal.
Change in satisfaction with visual appearance of community.
Decreased usage of indigenous language.
Increased contact with outside world.
Television, books and magazines become more common.
Local firms and government experience increased employee turnover.
Skills in traditional industries, such as fishing and subsistence, decline.

Number of temporarily unemployed workers increases due to arrival of job seekers.
Increase in income differentials.
Increased income leakage to regional centers.
Businesses expand in anticipation of increased demand.
New businesses are established.
Increase in goods and services available.
Increased business operating costs (rent and labor).
Cost-price squeeze in existing primary industries (such as fishing).
Increased demand for Native crafts due to more outsiders.
Property values increase.
Land speculation increases.
Increase in land purchased by outside investors.

Significant Use of Community Services and Facilities by Employees

People relocate due to dissatisfaction with community.
Large increase in turnover of officials and public employees.
° Change in expectation of government performance.
Many new facilities required.
Over capacity of services following peak activity.
Large increase in expenditures prior to revenue increase.
Large increase in debt financing and bonding of public infrastructure.
High facility maintenance expenditure following peak activity.
Many more medical personnel needed.
Medical personnel turnover increases,
Limited facilities are burdened.
New facilities and technology available.
Change in structure of health care delivery system.
Increase in medical emergency transportation demand.
Mental health needs increase.
More teachers and rooms needed.
Teacher turnover higher and they experience more stress.
Administrative and planning demand increase.
Conflicts increase between students.
Decrease in role of kinship groups in settling disputes.
Decrease in informal social interaction.
Increase in formal community functions (e.g., school board meetings).

Decrease in satisfaction with community due to over-burdened facilities and services.
Increase in satisfaction with community due to new or expanded facilities, services and stores.
Newcomer dissatisfaction with local stores and services.
Increased perception of community as impersonal.
Expectation of new wealth by local people.
Increase in perceived pace of life in community.
Large increase in local government employment.
Large increase in demand for services, construction and transportation.
Large increase in property tax rate as public facilities expand (prior to tax base increase),

Significant Use of Bars and Stores by Employees Living in Enclaves

Mental health needs increase.
Large increase in crimes against property and person.
Large increase in rate of alcohol and drug abuse, particularly after peak periods.
Increase in rate of family disturbance and child behavior problems.
Increase in concern about safety.
Increase in racial and cultural tensions.
Strain on courts and police.
Large rise in traffic accidents.
Newcomer dissatisfaction with local stores and services.
Increased perception of community as impersonal.
Expectation of new wealth by local people.
Increase in perceived pace of life in community.
Television, books and magazines become more common.
Large increase in employment in services, construction, and transportation.
Large increase in community income.
Large increase in local inflation rate.
Significant decrease in real value of fixed incomes.
Many businesses expand in anticipation of increased demand.
Many new businesses. are established.
Large increase in goods and services available.
New and expanded industries become dependent on oil revenue.
Local economic recessions occur following peak periods.

Large increase in demand for services, construction, and transportation.
Relative decrease in importance of existing primary industries (such as fishing).
Large increase in new businesses purchased by outsiders.
Property values increase substantially.
Land speculation increases.
Increase in land purchased by outside investors.
Mental health needs increase.
Large increase in racial and cultural tensions.
Strain on courts and police.
Increased concern about protection of subsistence resources and lifestyles.
Large increase in competition with sport hunters and fishermen for subsistence resources.
Increase in crimes against property and person.

SUMMARY OF TEST RUNS

The Enclave Model was tested on two communities: Nome and Unalaska. The preceding pages have demonstrated that the model is a usable and and useful tool for determining the direct impacts of OCS activities and highlighting the possible indirect impacts of OCS activities on a particular community. The examples given have shown that the model has the flexibility to include a wide variety of assumptions and the ability to distinguish between ranges of impacts.

The test runs of the model were useful in pointing out problems in procedures and instruments and these problems have been corrected in the final version.

WORKSHEET CONSIDERATIONS

Location Worksheet

The original location worksheet did not allow sufficient space for summarizing issues about the pros and cons of each potential site. It also did not provide sufficient detail for distinguishing site and phase. The worksheet has been expanded to correct for this. Efficiency requires that a separate Location Worksheet be filled out for each site at each phase.

Employment Worksheet

The employment worksheet also has been slightly expanded. All phases and all sites for a community can be analyzed on one employment worksheet. The estimates necessary as inputs to SCIMP are for the community as a whole (i.e., Nome) while the outputs from SCIMP *are* different for different sites (i.e., Barges, Nome, Cape Nome). The ranges used to determine the different levels of direct impacts *were* our best estimates of significant and proper cutoff points. The user may wish to change the percentages used to determine the level of direct impacts. Since the production phase is so long, the modal rather than maximum percentage is used.

Immigration Worksheet

A single immigration worksheet can be used for all sites and all phases being analyzed. The decision tree on page 1 of the worksheet must be run through for each site at each phase. The outcomes of this exercise are entered into Table 1 on page 2 of the worksheet. Table A provides assumptions used as inputs to SCIMP. The output from SCIMP, in the form of maximum percentages for Phases I and 11 and modal percentages for Phase III, are entered for each site on the appropriate lines (pp.2-3). Direct impacts are determined from these percentages according to the ranges shown. Again, these percentages are our best estimate of appropriate cutoff points for each of the three direct impacts addressed in this worksheet.

Utilities Worksheet

Although theoretically there is no effective limit on capacity because capacity levels, with funding, will adjust to demand, it is the fact that in short-term boom type developments demand fast outpaces capacity. It is useful for our form of analysis therefore to have estimates of present capacity and currently planned expansion and to compare those to SCIMP forecasts of demand. Although not-provided by the SCIMP runs for our test cases, capacity data can be entered into SCIMP and the necessary calculations provided by computer. For the test cases computations for the formula provided on the worksheet were done by hand. As formatted, the utilities worksheet requires no further explanation. A separate worksheet will be used for each phase.

Camp Use of Services and Company Bars and Stores Worksheet

A separate worksheet is used for each site and phase. Variable SCAMPOP from Table 1 of SCIMP and attitudes gleaned from community leaders during fieldwork provide the necessary data to complete worksheet.

Transportation Worksheet

In most cases the transportation impact is small for airports, as there is plenty of runway capacity. Terminal space could be a problem for large increases in passenger traffic. The major problem is the impact of large groups in the airport on local persons who are used *to* low numbers of other passengers. This effect can be reduced by new airport terminal construction in some cases.

Dock and harbor impacts are due mainly to competition with fishing boats, as in Dutch Harbor. Any oil terminal built *near* a present harbor will have a large impact due to the presence of large tankers. Service base operations with 2 or 3 rig tenders are usually not a problem, except in harbors already crowded.

Road traffic is only important if it goes though the main streets of town.

A separate worksheet is needed for each site and phase.

APPENDIX H

NOME ANDUNALASKASCIMP RUNS FOR MODEL TEST

N O M E SCIMP RUNS FOR ENCLAVE MODEL

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MEMORANDUM

TO: Chuck Cortese
Peter Cook
Jane Angvik
Jack Heesch

FROM: Gunnar Knapp

DATE: April 8, 1982

SUBJECT: NOME SCIMP Runs for Enclave Model

Attached are the SCIMP outputs for use in the ENCLAVE model for Nome. Three separate cases were run, for different enclave locations. These are the Nome case, the Cape Nome case, and the Gravel Islands case. For each case, nine tables were produced: Tables 1 through 4 and 5a through 5e. Explanations of the variables shown in each table are attached to the tables.

There are four reasons for the differences between cases. These are:

1. Different assumptions as to the share of labor which OCS industries will seek to hire locally.

2. Different assumptions as to the employment multipliers for camp residents.

3. Different assumptions as to the willingness of local residents to take OCS jobs.

4. Different assumptions as to the proportion of in-migrants who would choose to live in the camp.

I am preparing a writeup of the assumptions used for these SCIMP run-s which I will forward as soon as it is complete. There are a great many of these assumptions. In the case of Nome, I do not feel that existing data was good enough to *justify running* as elaborate *a* model as SCIMP. SCIMP can describe complicated economic interactions, but it can do so accurately only if the assumptions can be well grounded.

A simpler model would have been adequate, as well as easier and quicker to run. By "simpler," I mean using a simpler structure for modeling the economy, but calculating the same outputs. In general, for modeling Alaskan communities or regions, one needs models of differing levels of sophistication. I will be developing *several* simple models *which* will be available for the Dutch Harbor runs.

I apologize for the delay in completing the SCIMP runs. We made a number of simplifications in the programming of SCIMP so that the model can be run much more quickly than before; however, these modifications took time. Future runs will be able to proceed much faster. I am also much more familiar with the model now.

GK:dt
Attachments

TABLE 1

POPULATION EFFECTS OF OCS DEVELOPMENT

Variables	
BRESPOP	Total base case population (population without OCS)
ORESPOP	Total resident (non-camp) population with OCS
DRESPOP	Increase in resident population due to OCS
PDRESPOP	Increase in resident population due to OCS as share of base case population
CAMPPOP	OCS camp population
OTOTPOP	Total Population (including camp population) with OCS
SCAMPPOP	Share of camp population in total population with OCS

Table 1: Nome Case

YEAR	BRESPOP	ORESPOP	DRESPOP	PDRESPOP	CAMPPOP	OTOTPOP	SCAMPPOP
0	0.	0.	0.	0.	0.	0.	0.
1981	3240.	3240.	0.	0.	0.	3240.	0.
1982	3396.	3396.	0.	0.	0.	3396.	0.
1983	3539.	3547.	9.	0.00	30.	3577.	0.01
1984	3675.	3695.	20.	0.01	72.	3767.	0.02
1985	3806.	3830.	24.	0.01	84.	3914.	0.02
1986	3935.	4199.	264.	0*07	292.	4491.	0.07
1987	4064.	4906.	843.	0.21	698.	5604.	0.12
1988	4194.	4784.	590.	0.14	441.	5225.	0.08
1989	4324.	4866.	541.	0.13	432.	5298.	0.08
1990	4456.	5444.	988.	0.22	754.	6198.	0.12
1991	4592.	5288.	697.	0.15	496.	5784.	0.09
1992	4730.	5248.	519.	0.11	397.	5645.	0.07
1993	4870.	5249.	379.	0.08	319.	5568.	0.06
1994	5014.	5350.	335.	0.07	305.	5655.	0.05
1995	5163.	5488.	324.	0.06	303.	5791.	0.05
1996	5315.	5637.	322.	0.06	303.	5940.	0.05
1997	5470.	5791.	321.	0.06	303.	6094.	0.05
1998	5631.	5950.	319.	0.06	303.	6253.	0.05
1999	5796.	6114.	318.	0.05	303.	6417.	0.05
2000	5966.	6282.	316.	0.05	303.	6585.	0.05

Table 1: Cape Nome Case

	BRESPOP	ORESPOP	DRESPOP	PDRESPOP	CAMPPOP	OTOTPOP	SCAMPPOP
0	0.	0.	0.	0.	0.	0.	0.
1981	3240.	3240.	0.	0.	0.	3240.	0.
1982	3396.	3396.	0.	0.	0.	3396.	0.
1983	3539.	3541.	3.	0.00	36.	3577.	0.01
1984	3675.	3681.	6.	0.00	85.	3766.	0.02
1985	3806.	3813.	7.	0.00	100.	3913.	0.03
1986	3935.	4058.	123.	0.03	311.	4369.	0.07
1987	4064.	4538.	475.	0.12	745.	5283.	0.14
1988	4194.	4511.	317.	0.08	470.	4981.	0.09
1989	4324.	4606.	282.	0.07	461.	5067.	0.09
1990	4456.	5021.	564.	0.13	845.	5866.	0.14
1991	4592.	4970.	378.	0.08	529.	5499.	0.10
1992	4730.	4992.	262.	0.06	424.	5416.	0.08
1993	4870.	5040.	170.	0.03	341.	5381.	0.06
1994	5014.	5156.	142.	0.03	325.	5481.	0.06
1995	5163.	5295.	131.	0.03	323.	5618.	0.06
1996	5315.	5442.	128.	0.02	323.	5765.	0.06
1997	5470.	5594.	124.	0.02	323.	5917.	0.05
1998	5631.	5751.	120.	0.02	323.	6074.	0.05
1999	5796.	5912.	116.	0.02	323.	6235.	0.05
2000	5966.	6078.	112.	0.02	323.	6401.	0.05

Table 1: Gravel Islands Case

Year	BRESPOP	ORESPOP	DRESPOP	PDRESPOP	CAMPPOP	OTOTPOP	SCAMPPOP
0	0.	0.	0.	0.	0.	0.	0.
1981	3240.	3240.	0.	0.	0.	3240.	0.
1982	3396.	3396.	0.	0.	0.	3396.	0.
1983	3539.	3541.	2.	0.00	36.	3577.	0.01
1984	3675.	3680.	5.	0.00	85.	3765.	0.02
1985	3806.	3811.	5.	0.00	100.	3911.	0.03
1986	3935.	4034.	99.	0.03	311.	4345.	0.07
1987	4064.	4478.	414.	0.10	745.	5223.	0.14
1988	4194.	4466.	272.	0.06	470.	4936.	0.10
1989	4324.	4563.	239.	0.06	461.	5024.	0.09
1990	4456.	4947.	490.	0.11	845.	5792.	0.15
1991	4592.	4916.	324.	0.07	529.	5445.	0.10
1992	4730.	4949.	219.	0.05	424.	5373.	0.08
1993	4870.	5005.	135.	0.03	341.	5346.	0.06
1994	5014.	5123.	109.	0.02	325.	5448.	0.06
1995	5163.	5262.	99.	0.02	323.	5585.	0.06
1996	5315.	5409.	94.	0.02	323.	5732.	0.06
1997	5470.	5561.	90.	0.02	323.	5884.	0.05
1998	5631.	5717.	86.	0.02	323.	6040.	0.05
1999	5796.	5877.	81.	0.01	323.	6200.	0.05
2000	5966.	6043.	77.	0.01	323.	6366.	0.05

TABLE 2

LOCAL RESIDENT PARTICIPATION IN OCS EMPLOYMENT

Variables	
BASEMP	Base case employed residents (employment without OCS)
BASEMPO	Base case employed residents who take OCS jobs
BASNO	Base case non-employed residents who take OCS jobs
BASRESO	Total base case residents who take OCS jobs
SBROBLF1	Share of base case residents who take OCS jobs in base case labor force, where labor force is defined as base case employed residents plus base case non-employed residents who take OCS jobs
SBROEMP	Share of base case residents who take OCS jobs in base case resident employment
BASU	Baseline unemployment (standard definition)
SBROBLF2	Share of base case residents who take OCS jobs in base case labor force, where labor force is defined in standard way as base case employed plus base case unemployed

Table 2: Nome Case

YEAR	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	1275.	0.	0.	0.	0.	0.	150.	0.
1982	1317.	0.	0.	0.	0.	0.	155.	0.
1983	1357.	7.	1.	8.	0.01	0.01	159.	0.01
1984	1398.	17.	1.	18.	0.01	0.01	164.	0.01
1985	1437.	19.	2.	21.	0.01	0.01	169.	0.01
1986	1477.	89.	8.	97.	0.07	0.07	173.	0.06
1987	1517.	214.	19.	233.	0.15	0.15	178.	0.14
1988	1560.	135.	12.	147.	0.09	0.09	183.	0.08
1989	1601.	133.	11.	144.	0.09	0.09	188.	0.08
1990	1644.	232.	20.	252.	0.15	0.15	193.	0.14
1991	1689.	153.	12.	165.	0.10	0.10	198.	0.09
1992	1735.	124.	9.	133.	0.08	0.08	204.	0.07
1993	1781.	100.	7.	107.	0.06	0.06	209.	0.05
1994	1830.	96.	6.	102.	0.06	0.06	215.	0.05
1995	1880.	95.	6.	101.	0.05	0.05	221.	0.05
1996	1931.	95.	6.	101.	0.05	0.05	227.	0.05
1997	1983.	95.	6.	101.	0.05	0.05	233.	0.05
1998	2038.	95.	6.	101.	0.05	0.05	239.	0.04
1999	2094.	95.	6.	101.	0.05	0.05	246.	0.04
2000	2153.	95.	6.	101.	0.05	0.05	253.	0.04

Table 2: Cape Nome Case

YEAR	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	1275.	0.	0.	0.	0.	0.	150.	0.
1982	1317.	0.	0.	0.	0.	0.	155.	0.
1983	1357.	2.	0.	2.	0.00	0.00	159.	0.00
1984	1398.	5.	0.	5.	0.00	0.00	164.	0.00
1985	1437.	5.	0.	5.	0.00	0.00	169.	0.00
1986	1477.	70.	8.	78.	0.05	0.05	173.	0.05
1987	1517.	168.	18.	186.	0.12	0.12	178.	0.11
1988	1560.	107.	11.	118.	0.08	0.08	183.	0.07
1989	1601.	105.	10.	115.	0.07	0.07	188.	0.06
1990	1644.	182.	19.	201.	0.12	0.12	193.	0.11
1991	1689.	120.	12.	132.	0.08	0.08	198.	0.07
1992	1735.	97.	9.	106.	0.06	0.06	204.	0.05
1993	1781.	78.	7.	85.	0.05	0.05	209.	0.04
1994	1830.	76.	6.	82.	0.04	0.04	215.	0.04
1995	1880.	75.	6.	81.	0.04	0.04	221.	0.04
1996	1931.	75.	6.	81.	0.04	0.04	227.	0.04
1997	1983.	75.	6.	81.	0.04	0.04	233.	0.04
1998	2038.	75.	6.	81.	0.04	0.04	239.	0.04
1999	2094.	75.	6.	81.	0.04	0.04	246.	0.03
2000	2153.	75.	6.	81.	0.04	0.04	253.	0.03

Table 2: Gravel Islands Case

YEAR	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	1275.	0.	0.	0.	0.	0.	150.	0.
1982	1317.	0.	0.	0.	0.	0.	155.	0.
1983	1357.	2.	0.	2.	0.00	0.00	159.	0.00
1984	1398.	4.	1.	5.	0.00	0.00	164.	0.00
1985	1437.	4.	1.	5.	0.00	0.00	169.	0.00
1986	1477.	69.	9.	78.	0.05	0.05	173.	0.05
1987	1517.	164.	22.	186.	0.12	0.12	178.	0.11
1988	1560.	104.	14.	118.	0.08	0.08	183.	0.07
1989	1601.	102.	13.	115.	0.07	0.07	188.	0.06
1990	1644.	178.	23.	201.	0.12	0.12	193.	0.11
1991	1689.	117.	15.	132.	0.08	0.08	198.	0.07
1992	1735.	95.	11.	106.	0.06	0.06	204.	0.05
1993	1781.	76.	9.	85.	0.05	0.05	209.	0.04
1994	1830.	74.	8.	82.	0.04	0.04	215.	0.04
1995	1880.	73.	8.	81.	0.04	0.04	221.	0.04
1996	1931.	73.	8.	81.	0.04	0.04	227.	0.04
1997	1983.	73.	8.	81.	0.04	0.04	233.	0.04
1998	2038.	73.	8.	81.	0.04	0.04	239.	0.04
1999	2094.	73.	8.	81.	0.04	0.04	246.	0.03
2000	2153.	73.	8.	81.	0.04	0.04	253.	0.03

TABLE 3

RACIAL DISTRIBUTION OF RESIDENT POPULATION

Variables	
SNRESB	Share of natives in base case resident population
SNRESO	Share of natives in resident population with OCS

NOTE: Breakdowns of these shares for children and adults were not calculated due to a difficulty with the model.

Table 3: Nome Case

YEAR	SNRESB	SNRESO
0	0.	0.
1981	0.58	0.58
1982	0.57	0.57
1983	0.56	0.56
1984	0.56	0.55
1985	0.55	0.55
1986	0.55	0.52
1987	0.55	0.45
1988	0.54	0.48
1989	0.54	0.48
1990	0.54	0.44
1991	0.54	0.47
1992	0.54	0.48
1993	0.53	0.50
1994	0.53	0.50
1995	0.53	0.50
1996	0.53	0.50
1997	0.53	0.50
1998	0.53	0.50
1999	0.53	0.50
2000	0.53	0.50

Table 3: Cape Nome Case

YEAR	SNRESB	SNRESO
0	0.	0.
1981	0.58	0.58
1982	0.57	0.57
1983	0.56	0.56
1984	0.56	0.56
1985	0.55	0.55
1986	0.55	0.53
1987	0.55	0.49
1988	0.54	0.51
1989	0.54	0.51
1990	0.54	0.48
1991	0.54	0.50
1992	0.54	0.51
1993	0.53	0.52
1994	0.53	0.52
1995	0.53	0.52
1996	0.53	0.52
1997	0.53	0.52
1998	0.53	0.52
1999	0.53	0.52
2000	0.53	0.52

Table 3: Gravel Islands Case

YEAR	SNRESB	SNRESD
0	0.	0.
1981	0.58	0.58
1982	0.57	0.57
1983	0.56	0.56
1984	0.56	0.56
1985	0.55	0.55
1986	0.55	0.54
1987	0.55	0.50
1988	0.54	0.51
1989	0.54	0.51
1990	0.54	0.49
1991	0.54	0.50
1992	0.54	0.51
1993	0.53	0.52
1994	0.53	0.52
1995	0.53	0.52
1996	0.53	0.52
1997	0.53	0.52
1998	0.53	0.52
1999	0.53	0.52
2000	0.53	0.52

TABLE 4

BASE CASE RESIDENT SHARES IN TOTAL OCS EMPLOYMENT

Variables	
OCSOFFSH	Offshore OCS employment
OCSONSH	Onshore OCS employment
OCSTOT	Total OCS employment
BASRESO	Total base case residents who take OCS jobs
SBROOCST	Share of base case residents taking OCS jobs in total OCS jobs
SBROOCSO	Share of base case residents taking OCS jobs in total onshore OCS jobs

NOTE: This table directly reflects the assumptions made about industry demand for local labor.

Table 4: Nome Case

YEAR	OCSOFFSH	OCSONSH	OCSTOT	BASRESO	SBROOCST	SBROOCSO
0	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.13E 37	0.13E 37
1982	0.	0.	0.	0.	0.13E 37	0.13E 37
1983	325.	38.	363.	8.	0.02	0.21
1984	784.	90.	874.	18.	0.02	0.20
1985	939.	105.	1044.	21.	0.02	0.20
1986	729.	389.	1118.	97.	0.09	0.25
1987	592.	931.	1523.	233.	0.15	0.25
1988	1987.	588.	2575.	147.	0.06	0.25
1989	1702.	576.	2278.	144.	0.06	0.25
1990	2644.	1006.	3650.	252.	0.07	0.25
1991	2731.	661.	3392.	165.	0.05	0.25
1992	2442.	530.	2972.	133.	0.04	0.25
1993	1926.	426.	2352.	107.	0.05	0.25
1994	1683.	407.	2090.	102.	0.05	0.25
1995	1687.	404.	2091.	101.	0.05	0.25
1996	1777.	404.	2181.	101.	0.05	0.25
1997	1807.	404.	2211.	101.	0.05	0.25
1998	1807.	404.	2211.	101.	0.05	0.25
1999	1807.	404.	2211.	101.	0.05	0.25
2000	1807.	404.	2211.	101.	0.05	0.25

Table 4 : Cape Nome Case

YEAR	OCSOFFSH	OCSONSH	OCSTOT	BASRESO	SBROOCST	SBROOCSO
0	0.	0.	0.	0.	0,	0.
1981	0,	0.	0.	0,	0.13E 37	0.13E 37
1982	0,	0.	0.	0.	0.13E 37	0.13E 37
1983	325.	38.	363.	2.	0.01	0.05
1984	784.	90.	874.	5.	0.01	0.06
1985	939.	105.	1044.	5.	0.00	0.05
1986	729.	389.	1118.	78.	0.07	0.20
1987	592.	931.	1523.	186.	0.12	0.20
1988	1987.	588.	2575.	118.	0.05	0.20
1989	1702.	576.	2278.	115.	0.05	0.20
1990	2644.	1046.	3690.	201.	0.05	0.19
1991	2731.	661.	3392.	132.	0.04	0.20
1992	2442.	530.	2972.	106.	0.04	0.20
1993	1926.	426.	2352.	85.	0.04	0.20
1994	1683.	407.	2090.	82.	0.04	0.20
1995	1687.	404.	2091.	81.	0.04	0.20
1996	1777.	404.	2181.	81.	0.04	0.20
1997	1807.	404.	2211.	81.	0.04	0.20
1998	1807.	404.	2211.	81.	0.04	0.20
1999	1807.	404.	2211.	81.	0.04	0.20
2000	1807.	404.	2211.	81.	0.04	0.20

Table 4: Grave Islands Case

YEAR	OCSOFFSH	OCSONSH	OCSTOT'	BASRESO	SBROOCST	SBROOCSO
0	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.13E 37	0.13E 37
1982	0.	0.	0.	0.	.13E 37	0.13E 37
1983	325.	38.	363.	2.	0.01	0.05
1984	784.	90.	874.	5.	0.01	0.06
1985	939.	105.	1044.	5.	0.00	0.05
1986	729.	389.	1118.	78.	0.07	0.20
1987	592.	931.	1523.	186.	0.12	0.20
1988	1987.	588.	2575.	118.	0.05	0.20
1989	1702.	576.	2278.	115.	0.05	0.20
1990	2644.	1046.	3690.	201.	0.05	0.19
1991	2731.	661.	3392.	132.	0.04	0.20
1992	2442.	530.	2972.	106.	0.04	0.20
1993	1926.	426.	2352.	85.	0.04	0.20
1994	1683.	407.	2090.	82.	0.04	0.20
1995	1687.	404.	2091.	81.	0.04	0.20
1996	1777.	404.	2181.	81.	0.04	0.20
1997	1807.	404.	2211.	81.	0.04	0.20
1998	1807.	404.	2211.	81.	0.04	0.20
1999	1807.	404.	2211.	81.	0.04	0.20
2000	1807.	404.	2211.	81.	0.04	0.20

TABLES 5a - 5e

EFFECTS OF OCS ON DEMAND FOR SERVICES AND INFRASTRUCTURE

Table	Category	Units
5a	Solid Waste	1/100's of an acre required per year for landfill
5b	Water	Thousand gallons per day
5c	Electricity	Kilowatts of generating capacity
5d	Sewage Treatment	Thousand gallons per day
5e	Police Officers	Number of officers

Variables

CAP	Capacity. In many cases, there is no effective limit (other than funding) on capacity. It is not useful to attempt to compare demand with arbitrary capacity levels, because the capacity levels will adjust to demand. In these cases, a large number (1,000,000) was chosen for capacity in order to be able to run the model.
BASD	Base case demand
OCSDA	OCS case demand, if camp has independent services
OCSDB	OCS case demand, if camp uses local services
DDA	Increase in demand due to OCS, if camp has independent services
DDB	Increase in demand due to OCS, if camp uses local services
PDDA	Share of increase in demand in base case demand, if camp has independent' services
PDDB	Share of increase in demand in base case demand, if camp uses local services
BSDC	Base case demand as share of capacity, where applicable (see definition of capacity)
OSDCA	OCS case demand as share of capacity, if camp has independent services, where applicable
OSDCB	OCS case demand as share of capacity, if camp uses local services, where applicable

TABLES 5a - 5e (CONTINUED)

NOTE: I calculated fewer of these variables than I had originally planned to because of the problem mentioned above in defining capacity. Where demand is directly population-dependent, as it is for all services except police officers, the percentage effects on demand are the same for all variables. I was not able tofinddatato use in calculating demand or capacity for airport passengers. The difficulty mentioned for Table 3 in calculating numbers of children prevented me from calculating demand for classrooms and teachers; however, I expect to be able to fix that problem fairly easily.

Table 5a: Home Case (Solid Waste)

ar	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
1981	1000000.	68.	68.	68.	0.	0.	0.	0.	0.	0.	0.
1982	1000000.	71.	71.	71.	0.	0.	0.	0.	0.	0.	0.
1983	1000000.	74.	74.	75.	0.	1.	0.00	0.01	0.	0.	0.
1984	1000000.	77.	78.	79.	0.	2.	0.01	0.03	0.	0.	0.
1985	1000000.	80.	80.	82.	0.	2.	0.01	0.03	0.	0.	0.
1986	1000000.	83.	88.	94.	6.	12.	0.07	0.14	0.	0.	0.
1987	1000000.	85.	103.	118.	18.	32.	0.21	0.38	0.	0.	0.
1988	1000000.	88.	100.	110.	12.	22.	0.14	0.25	0.	0.	0.
1989	1000000.	91.	102.	111.	11.	20.	0.13	0.23	0.	0.	0.
1990	1000000.	94.	114.	130.	21.	37.	0.22	0.39	0.	0.	0.
1991	1000000.	96.	111.	121.	15.	25.	0.15	0.26	0.	0.	0.
1992	1000000.	99.	110.	119.	11.	19.	0.11	0.19	0.	0.	0.
1993	1000000.	102.	110.	117.	8.	15.	0.08	0.14	0.	0.	0.
1994	1000000.	105.	112.	119.	7.	13.	0.07	0.13	0.	0.	0.
1995	1000000.	108.	115.	122.	7.	13.	0.06	0.12	0.	0.	0.
1996	1000000.	112.	118.	125.	7.	13.	0.06	0.12	0.	0.	0.
1997	1000000.	115.	122.	128.	7.	13.	0.06	0.11	0.	0.	0.
1998	1000000.	118.	125.	131.	7.	13.	0.06	0.11	0.	0.	0.
1999	1000000.	122.	128.	135.	7.	13.	0.05	0.11	0.	0.	0.
2000	1000000.	125.	132.	138.	7.	13.	0.05	0.10	0.	0.	0.

Table 5a: Cape Nome Case (Solid Waste)

Year	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
1981	1000000.	68.	68.	68.	0.	0.	0.	0.	0.	0.	0.
1982	1000000.	71.	71.	71.	0.	0.	0.	0.	0.	0.	0.
1983	1000000.	74.	74.	75.	0.	1.	0.00	0.01	0.	0.	0.
1984	1000000.	77.	77.	79.	0.	2.	0.00	0.02	0.	0.	0.
1985	1000000.	80.	80.	82.	0.	2.	0.00	0.03	0.	0.	0.
1986	1000000.	83.	85.	92.	3.	9.	0.03	0.11	0.	0.	0.
1987	1000000.	85.	95.	111.	10.	26.	0.12	0.30	0.	0.	0.
1988	1000000.	88.	95.	105.	7.	17.	0.08	0.19	0.	0.	0.
1989	1000000.	91.	97.	106.	6.	16.	0.07	0.17	0.	0.	0.
1990	1000000.	94.	105.	123.	12.	30.	0.13	0.32	0.	0.	0.
1991	1000000.	96.	104.	115.	8.	19.	0.08	0.20	0.	0.	0.
1992	1000000.	99.	105.	114.	6.	14.	0.06	0.15	0.	0.	0.
1993	1000000.	102.	106.	113.	4.	11.	0.03	0.10	0.	0.	0.
1994	1000000.	105.	108.	115.	3.	10.	0.03	0.09	0.	0.	0.
1995	1000000.	108.	111.	118.	3.	10.	0.03	0.09	0.	0.	0.
1996	1000000.	112.	114.	121.	3.	9.	0.02	0.08	0.	0.	0.
1997	1000000.	115.	117.	124.	3.	9.	0.02	0.08	0.	0.	0.
1998	1000000.	118.	121.	128.	3.	9.	0.02	0.08	0.	0.	0.
1999	1000000.	122.	124.	131.	2.	9.	0.02	0.08	0.	0.	0.
2000	1000000.	125.	128.	134.	2.	9.	0.02	0.07	0.	0.	0.

Table 5a: Gravel Islands Case (Solid Waste)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0	1000000.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1981	1000000	68.	68.	68.	0.	0.	0.	0.	0	0.	0.
1982	1000000	71.	71.	71.	0.	0.	0.	0.	0	0.	0.
1983	1000000.	74.	74.	75.	0.	1.	0.00	0.01	0	0.	0.
1984	1000000.	77.	77.	79.	0.	2.	0.00	0.02	0	0.	0.
1985	1000000.	80.	80.	82.	0.	2.	0.00	0.03	0	0.	0.
1986	1000000.	83.	85.	91.	2.	9.	0.03	0.10	0	0.	0.
1987	1000000.	85.	94.	110.	9.	24.	0.10	0.29	0	0.	0.
1988	1000000.	88.	94.	104.	6.	16.	0.06	0.18	0	0.	0.
1989	1000000.	91.	96.	106.	5.	15.	0.06	0.16	0	0.	0.
1990	1000000.	94.	104.	122.	10.	28.	0.11	0.30	0	0.	0.
1991	1000000.	96.	103.	114.	7.	18.	0.07	0.19	0	0.	0.
1992	1000000.	99.	104.	113.	5.	14.	0.05	0.14	0	0.	0.
1993	1000000.	102.	105.	112.	3.	10.	0.03	0.10	0	0.	0.
1994	1000000.	105.	108.	114.	2.	9.	0.02	0.09	0	0.	0.
1995	1000000.	108.	111.	117.	2.	9.	0.02	0.08	0	0.	0.
1996	1000000.	112.	114.	120.	2.	9.	0.02	0.08	0	0.	0.
1997	1000000.	115.	117.	124.	2.	9.	0.02	0.08	0	0.	0.
1998	1000000.	118.	120.	127.	2.	9.	0.02	0.07	0.	0.	0.
1999	1000000.	122.	123.	130.	2.	8.	0.01	0.07	0.	0.	0.
2000	1000000.	125.	127.	134.	2.	8.	0.01	0.07	0.	0.	0.

Table 5b: Cape Nome Case (Water)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	490.	259.	259.	259.	0.	0.	0.	0.	0.53	0.53	0.53
1982	490.	272.	272.	272.	0.	0.	0.	0.	0.55	0.55	0.55
1983	490.	283.	283.	286.	0.	3.	0.00	0.01	0.58	0.58	0.58
1984	490.	294.	294.	301.	1.	7.	0.00	0.02	0.60	0.60	0.62
1985	490.	304.	305.	313.	1.	9.	0.00	0.03	0.62	0.62	0.64
1986	490.	315.	325.	349.	10.	35.	0.03	0.11	0.64	0.66	0.71
1987	490.	325.	363.	423.	38.	98.	0.12	0.30	0.66	0.74	0.86
1988	490.	336.	361.	399.	25.	63.	0.08	0.19	0.69	0.74	0.81
1989	490.	346.	369.	405.	23.	59.	0.07	0.17	0.71	0.75	0.83
1990	490.	357.	402.	469.	45.	113.	0.13	0.32	0.73	0.82	0.96
1991	490.	367.	398.	440.	30.	73.	0.08	0.20	0.75	0.81	0.90
1992	490.	378.	399.	433.	21.	55.	0.06	0.15	0.77	0.82	0.88
1993	490.	390.	403.	431.	14.	41.	0.03	0.10	0.80	0.82	0.88
1994	490.	401.	412.	438.	11.	37.	0.03	0.09	0.82	0.84	0.90
1995	490.	413.	424.	449.	11.	36.	0.03	0.09	0.84	0.87	0.92
1996	490.	425.	435.	461.	10.	36.	0.02	0.08	0.87	0.89	0.94
1997	490.	438.	448.	473.	10.	36.	0.02	0.08	0.89	0.91	0.97
1998	490.	450.	460.	486.	10.	35.	0.02	0.08	0.92	0.94	0.99
1999	490.	464.	473.	499.	9.	35.	0.02	0.08	0.95	0.97	1.02
2000	490.	477.	486.	512.	9.	35.	0.02	0.07	0.97	0.99	1.05

Table 5b: Islands Case (Water)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	490.	259.	259.	259.	0.	0.	0.	0.	0.53	0.53	0.53
1982	490.	272.	272.	272.	0.	0.	0.	0.	0.55	0.55	0.55
1983	490.	283.	283.	286.	0.	3.	0.00	0.01	0.58	0.58	0.58
1984	490.	294.	294.	301.	0.	7.	0.00	0.02	0.60	0.60	0.62
1985	490.	304.	305.	313.	0.	8.	0.00	0.03	0.62	0.62	0.64
1986	490.	315.	323.	348.	8.	33.	0.03	0.10	0.64	0.66	0.71
1987	490.	325.	358.	418.	33.	93.	0.10	0.29	0.66	0.73	0.85
1988	490.	336.	357.	395.	22.	59.	0.06	0.18	0.69	0.73	0.81
1989	490.	346.	365.	402.	19.	56.	0.06	0.16	0.71	0.75	0.83
1990	490.	357.	396.	463.	39.	107.	0.11	0.30	0.73	0.81	0.95
1991	490.	367.	393.	434.	26.	68.	0.07	0.19	0.75	0.80	0.89
1992	490.	378.	396.	430.	18.	51.	0.05	0.14	0.77	0.81	0.88
1993	490.	390.	400.	428.	11.	38.	0.03	0.10	0.80	0.82	0.87
1994	490.	401.	410.	436.	9.	35.	0.02	0.09	0.82	0.84	0.89
1995	490.	413.	421.	447.	8.	34.	0.02	0.08	0.84	0.86	0.91
1996	490.	425.	433.	459.	8.	33.	0.02	0.08	0.87	0.88	0.93
1997	490.	438.	445.	471.	7.	33.	0.02	0.08	0.89	0.91	0.96
1998	490.	450.	457.	483.	7.	33.	0.02	0.07	0.92	0.93	0.98
1999	490.	464.	470.	496.	7.	32.	0.0	0.07	0.95	0.96	1.01
2000	490.	477.	483.	509.	6.	32.	0.0	0.07	0.97	0.99	1.04

Table 5c: Home Case (Electricity)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	1000000.	6480.	6480.	6480.	0.	0.	0.	0.	0.01	0.01	0.
1982	1000000.	6792.	6792.	6792.	0.	0.	0.	0.	0.01	0.01	0.
1983	1000000.	7077.	7095.	7155.	17.	77.	0.00	0.01	0.01	0.01	0.
1984	1000000.	7349.	7389.	7533.	40.	184.	0.01	0.03	0.01	0.01	0.
1985	1000000.	7612.	7660.	7828.	47.	215.	0.01	0.03	0.01	0.01	0.
1986	1000000.	7870.	8399.	8983.	529.	1113.	0.07	0.14	0.01	0.01	0.
1987	1000000.	8127.	9813.	11209.	1686.	3082.	0.21	0.38	0.01	0.01	0.
1988	1000000.	8388.	9569.	10451.	1181.	2063.	0.14	0.25	0.01	0.01	0.
1989	1000000.	8648.	9731.	10595.	1083.	1947.	0.13	0.23	0.01	0.01	0.
1990	1000000.	8913.	10888.	12396.	1976.	3484.	0.22	0.39	0.01	0.01	0.
1991	1000000.	9183.	10577.	11569.	1393.	2385.	0.15	0.26	0.01	0.01	0
1992	1000000.	9460.	10497.	11291.	1037.	1831.	0.11	0.19	0.01	0.01	0.
1993	1000000.	9740.	10499.	11137.	759.	1397.	0.08	0.14	0.01	0.01	0.
1994	1000000.	10029.	10700.	11310.	671.	1281.	0.07	0.13	0.01	0.01	0.
1995	1000000.	10327.	10975.	11581.	648.	1254.	0.06	0.12	0.01	0.01	0.
1996	1000000.	10630.	11274.	11880.	644.	1250.	0.06	0.12	0.01	0.01	0.
1997	1000000.	10941.	11582.	12188.	642.	1248.	0.06	0.11	0.01	0.01	0.
1998	1000000.	11262.	11901.	12507.	639.	1245.	0.06	0.11	0.01	0.01	0.
1999	1000000.	11591.	12227.	12833.	636.	1242.	0.05	0.11	0.01	0.01	0.
2000	1000000.	11932.	12565.	13171.	633.	1239.	0.05	0.10	0.01	0.01	0.

Table 5c: Cape Nome Case (Electricity)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA		BSDC	OSDCA	OSDCB
0											
1981	1000000.	6480.	6480.	6480.	0.	0.	0.	0.	0.01	0.01	0.01
1982	1000000.	6792.	6792.	6792.	0.	0.	0.	0.	0.01	0.01	0.01
1983	1000000.	7077.	7082.	7154.	5.	77.	0.00	0.01	0.01	0.01	0.01
1984	1000000.	7349.	7362.	7532.	13.	183.	0.00	0.02	0.01	0.01	0.01
1985	1000000.	7612.	7626.	7826.	14.	214.	0.00	0.03	0.01	0.01	0.01
1986	1000000.	7870.	8115.	8737.	245.	867.	0.03	0.11	0.01	0.01	0.01
1987	1000000.	8127.	9077.	10567.	950.	2440.	0.12	0.30	0.01	0.01	0.01
1988	1000000.	8388.	9023.	9963.	635.	1575.	0.08	0.19	0.01	0.01	0.01
1989	1000000.	8648.	9213.	10135.	564.	1486.	0.07	0.17	0.01	0.01	0.01
1990	1000000.	8913.	10041.	11731.	128.	2818.	0.13	0.32	0.01	0.01	0.01
1991	1000000.	9183.	9939.	10997.	756.	1814.	0.08	0.20	0.01	0.01	0.01
1992	1000000.	9460.	9984.	10832.	524.	1372.	0.06	0.15	0.01	0.01	0.01
1993	1000000.	9740.	10081.	10763.	340.	1022.	0.03	0.10	0.01	0.01	0.01
1994	1000000.	10029.	10312.	10962.	284.	934.	0.03	0.09	0.01	0.01	0.01
1995	1000000.	10327.	10590.	11236.	263.	909.	0.03	0.09	0.01	0.01	0.01
1996	1000000.	10630.	10885.	11531.	255.	901.	0.02	0.08	0.01	0.01	0.01
1997	1000000.	10941.	11189.	11835.	248.	894.	0.02	0.08	0.01	0.01	0.01
1998	1000000.	11262.	11502.	12148.	240.	886.	0.02	0.08	0.01	0.01	0.01
1999	1000000.	11591.	11823.	12469.	232.	870.	0.02	0.08	0.01	0.01	0.01
2000	1000000.	11932.	12156.	12802.	224.	870.	0.02	0.07	0.01	0.01	0.01

Table 5c: Gravel Islands Case (Electricity)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	1000000.	6480.	6480.	6480.	0.	0.	0.	0.	0.01	0.01	0.
1982	1000000.	6792.	6792.	6792.	0.	0.	0.	0.	0.01	0.01	0.
1983	1000000.	7077.	7081.	7153.	4.	76.	0.00	0.01	0.01	0.01	0.
1984	1000000.	7349.	7359.	7529.	10.	180.	0.00	0.02	0.01	0.01	0.
1985	1000000.	7612.	7623.	7823.	11.	211.	0.00	0.03	0.01	0.01	0.
1986	0°°00°.	7870.	8068.	8690.	198.	820.	0.03	0.10	0.01	0.01	0.
1987	1000000.	8127	8956.	10446.	828.	2318.	0.10	0.29	0.01	0.01	0.
1988	1000000.	8388	8931.	9871.	543.	1483.	0.06	0.18	0.01	0.01	0.
1989	1000000.	8648	9126.	10048.	478.	1400.	0.06	0.16	0.01	0.01	0.
1990	1000000.	8913	9893.	11583.	981.	2671.	0.11	0.30	0.01	0.01	0.
1991	1000000.	9183	9831.	10809.	648.	1706.	0.07	0.19	0.01	0.01	0.
1992	1000000.	9460	9898.	10746.	438.	1286.	0.05	0.14	0.01	0.01	0.
1993	1000000.	9740	10011.	10693.	270.	952.	0.03	0.10	0.01	0.01	0.
1994	1000000.	10029	10247.	10897.	218.	868.	0.02	0.09	0.01	0.01	0.
1995	000000.	10327	10524.	11170.	197.	843.	0.02	0.08	0.01	0.01	0.
1996	1000000.	10630	10819.	11465.	189.	835.	0.02	0.08	0.01	0.01	0.
1997	1000000.	10941	11121.	11767.	181.	827.	0.02	0.08	0.01	0.01	0.
1998	1000000.	11262	11433.	12079.	172.	818.	0.02	0.07	0.01	0.01	0.
1999	1000000.	11591	11754.	12400.	163.	809.	0.01	0.07	0.01	0.01	0.
2000	1000000.	11932	12085.	12731.	153.	799.	0.01	0.07	0.01	0.01	0.

Table 5d: Home Case (Sewage Treatment)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	173.	259.	259.	259.	0.	0.	0.	0.	1.50	1.50	1.50
1982	173.	272.	272.	272.	0.	0.	0.	0.	1.57	1.57	1.57
1983	173.	283.	284.	286.	1.	3.	0.00	0.01	1.64	1.64	1.66
1984	173.	294.	296.	301.	2.	7.	0.01	0.03	1.70	1.71	1.74
1985	173.	304.	306.	313.	2.	9.	0.01	0.03	1.76	1.77	1.81
1986	173.	315.	336.	359.	21.	45.	0.07	0.14	1.82	1.94	2.08
1987	173.	325.	393.	448.	67.	123.	0.21	0.38	1.88	2.27	2.59
1988	173.	336.	383.	418.	47.	83.	0.14	0.25	1.94	2.22	2.42
1989	173.	346.	389.	424.	43.	78.	0.13	0.23	2.00	2.25	2.45
1990	173.	357.	436.	496.	79.	139.	0.22	0.39	2.06	2.52	2.87
1991	173.	367.	423.	463.	56.	95.	0.15	0.26	2.13	2.45	2.68
1992	173.	378.	420.	452.	41.	73.	0.11	0.19	2.19	2.43	2.61
1993	173.	390.	420.	445.	30.	56.	0.08	0.14	2.25	2.43	2.58
1994	173.	401.	428.	452.	27.	51.	0.07	0.13	2.32	2.48	2.62
1995	173.	413.	439.	463.	26.	50.	0.06	0.12	2.39	2.54	2.68
1996	173.	425.	451.	475.	26.	50.	0.06	0.12	2.46	2.61	2.75
1997	173.	438.	463.	488.	26.	50.	0.06	0.11	2.53	2.68	2.82
1998	173.	450.	476.	500.	26.	50.	0.06	0.11	2.61	2.75	2.90
1999	173.	464.	489.	513.	25.	50.	0.05	0.11	2.68	2.83	2.97
2000	173.	477.	503.	527.	25.	50.	0.05	0.10	2.76	2.91	3.05

Table 5d: Cape Nome Case (Sewage Treatment)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	173.	259.	259.	259.	0.	0.	0.	0.	1.50	1.50	1.50
1982	173.	272.	272.	272.	0.	0.	0.	0.	1.57	1.57	1.57
1983	173.	283.	283.	286.	0.	3.	0.00	0.01	1.64	1.64	1.66
1984	173.	294.	294.	301.	1.	7.	0.00	0.02	1.70	1.70	1.74
1985	173.	304.	305.	313.	1.	9.	0.00	0.03	1.76	1.77	1.81
1986	173.	315.	325.	349.	10.	35.	0.03	0.11	1.82	1.88	2.02
1987	173.	325.	363.	423.	38.	98.	0.12	0.30	1.88	2.10	2.45
1988	173.	336.	361.	399.	25.	63.	0.08	0.19	1.94	2.09	2.31
1989	173.	346.	369.	405.	23.	59.	0.07	0.17	2.00	2.13	2.35
1990	173.	357.	402.	469.	45.	113.	0.13	0.32	2.06	2.32	2.72
1991	173.	367.	398.	440.	30.	73.	0.08	0.20	2.13	2.30	2.55
1992	173.	378.	399.	433.	21.	55.	0.06	0.15	2.19	2.31	2.51
1993	173.	390.	403.	431.	14.	41.	0.03	0.10	2.25	2.33	2.49
1994	173.	401.	412.	438.	11.	37.	0.03	0.09	2.32	2.39	2.54
1995	173.	413.	424.	449.	11.	36.	0.03	0.09	2.39	2.45	2.60
1996	173.	425.	435.	461.	10.	36.	0.02	0.08	2.46	2.52	2.67
1997	173.	438.	448.	473.	10.	36.	0.02	0.08	2.53	2.59	2.74
1998	173.	450.	460.	486.	10.	35.	0.02	0.08	2.61	2.66	2.81
1999	173.	464.	473.	499.	9.	35.	0.02	0.08	2.68	2.74	2.89
2000	173.	477.	486.	512.	9.	35.	0.02	0.07	2.76	2.81	2.96

Table 5d: Gravel Islands Case (Sewage Treatment)

YEAR	CAP		OCSDA	OCSDB		∞B		PDDB	BSDC	OSDCA	OSDCB
0											
1981	173.	259.	259.	259.	0.	0.	0	0.	1.50	1.50	1.50
1982	173.	272.	272.	272.	0.	0.	0	0.	1.57	1.57	1.57
1983	173.	283.	283.	286.	0.	3.	0.00	0.01	1.64	1.64	1.66
1984	173.	294.	294.	301.	0.	7.	0.00	0.02	1.70	1.70	1.74
1985	173.	304.	305.	313.	0.	8.	0.00	0.03	1.76	1.76	1.81
1986	173.	315.	323.	348.	8.	33.	0.03	0.10	1.82	1.87	2.01
1987	173.	325.	350.	418.	33.	93.	0.10	0.29	1.88	2.07	2.42
1988	173.	336.	357.	395.	22.	59.	0.06	0.18	1.94	2.07	2.29
1989	173.	346.	365.	402.	19.	56.	0.06	0.16	2.00	2.11	2.33
1990	173.	357.	396.	463.	39.	107.	0.11	0.30	2.06	2.29	2.68
1991	173.	367.	393.	436.	26.	68.	0.07	0.19	2.13	2.28	2.52
1992	173.	378.	396.	430.	18.	51.	0.05	0.14	2.19	2.29	2.49
1993	173.	390.	400.	428.	11.	38.	0.03	0.10	2.25	2.32	2.48
1994	173.	401.	410.	436.	9.	35.	0.02	0.09	2.32	2.37	2.52
1995	173.	413.	421.	447.	8.	34.	0.02	0.08	2.39	2.44	2.59
1996	173.	425.	433.	459.	8.	33.	0.02	0.08	2.46	2.50	2.65
1997	173.	438.	445.	471.	7.	33.	0.02	0.08	2.53	2.57	2.72
1998	173.	450.	457.	483.	7.	33.	0.02	0.07	2.61	2.65	2.80
1999	173.	464.	470.	496.	7.	32.	0.01	0.07	2.68	2.72	2.87
2000	173.	477.	483.	509.	6.	32.	0.01	0.07	2.76	2.80	2.95

Table 5c: Nome Case (Police Officers)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	000000.	9.	9.	9.	0.	0.	0.	0.	0.	0.	0.
1982	1000000.	10.	10.	10.	0.	0.	0.	0.	0.	0.	0.
1983	1000000.	10.	10.	10.	0.	0.	0.00	0.01	0	0.	0.
1984	1000000.	10.	10.	11.	0.	0.	0.00	0.02	0	0.	0.
1985	1000000.	11.	11.	11.	0.	0.	0.00	0.02	0	0.	0.
1986	1000000.	11.	11.	12.	1.	1.	0.05	0.10	0	0.	0.
1987	1000000.	11.	13.	14.	2.	3.	0.15	0.28	0	0.	0.
1988	1000000.	11.	13.	13.	1.	2.	0.10	0.18	0	0.	0.
1989	1000000.	12.	13.	14.	1.	2.	0.09	0.17	0	0.	0.
1990	1000000.	12.	14.	15.	2.	3.	0.17	0.29	0	0.	0.
1991	1000000.	12.	14.	15.	1.	2.	0.11	0.20	0	0.	0.
1992	1000000.	12.	13.	14.	1.	2.	0.08	0.15	0	0.	0.
1993	000000.	13.	13.	14.	1.	1.	0.06	0.11	0	0.	0.
1994	1000000.	13.	14.	14.	1.	1.	0.05	0.10	0	0.	0.
1995	000000.	13.	14.	15.	1.	1.	0.05	0.09	0	0.	0.
1996	1 .	14.	14.	15.	1.	1.	0.05	0.09	0	0.	0.
1997	000°°°.	14.	15.	15.	1.	1.	0.05	0.09	0	0.	0.
1998	.	14.	15.	16.	1.	1.	0.04	0.09	0.	0.	0.
1999	1000000.	15.	15.	16.	1.	1.	0.04	0.09	0.	0.	0.
2000	1000000.	15.	16.	16.	1.	1.	0.04	0.08	0.	0.	0.

Case (Police Officers)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	1000000.	9.	9.	9.	0.	0.	0.	0.	0.	0.	0.
1982	1000000.	10.	10.	10.	0.	0.	0.	0.	0.	0.	0.
1983	1000000.	10.	10.	10.	0.	0.	0.00	0.01	0.	0.	0.
1984	1000000.	10.	10.	11.	0.	0.	0.00	0.02	0.	0.	0.
1985	1000000.	11.	11.	11.	0.	0.	0.00	0.02	0.	0.	0.
1986	1000000.	11.	11.	12.	0.	1.	0.02	0.08	0.	0.	0.
1987	1000000.	11.	12.	14.	1.	2.	0.09	0.22	0.	0.	0.
1988	1000000.	11.	12.	13.	1.	2.	0.06	0.14	0.	0.	0.
1989	1000000.	12.	12.	13.	1.	1.	0.05	0.13	0.	0.	0.
1990	1000000.	12.	13.	15.	1.	3.	0.09	0.24	0.	0.	0.
1991	1000000.	12.	13.	14.	1.	2.	0.06	0.15	0.	0.	0.
1992	1000000.	12.	13.	14.	1.	1.	0.04	0.11	0.	0.	0.
1993	1000000.	13.	13.	14.	0.	1.	0.03	0.08	0.	0.	0.
1994	1000000.	13.	13.	14.	0.	1.	0.02	0.07	0.	0.	0.
1995	1000000.	13.	14.	14.	0.	1.	0.02	0.07	0.	0.	0.
1996	1000000.	14.	14.	15.	0.	1.	0.02	0.07	0.	0.	0.
1997	1000000.	14.	14.	15.	0.	1.	0.02	0.06	0.	0.	0.
1998	1000000.	14.	15.	15.	0.	1.	0.02	0.06	0.	0.	0.
1999	1000000.	15.	15.	15.	0.	1.	0.02	0.06	0.	0.	0.
2000	1000000.	15.	15.	16.	0.	1.	0.01	0.06	0.	0.	0.

Table 5c: Gravel Islands Case (Police Officers)

YEAR	CAP	BASD	OCSDA	OCSDB	DDA	DDB	PDDA	PDDB	BSDC	OSDCA	OSDCB
0											
1981	1000000.	9.	9.	9.	0.	0.	0.	0.	0.	0.	0.
1982	1000000.	10.	10.	10.	0.	0.	0.	0.	0.	0.	0.
1983	1000000.	10.	10.	10.	0.	0.	0.00	0.01	0.	0.	0.
1984	1000000.	10.	10.	11.	0.	0.	0.00	0.02	0.	0.	0.
1985	1000000.	11.	11.	11.	0.	0.	0.00	0.02	0.	0.	0.
1986	1000000.	11.	11.	12.	0.	1.	0.02	0.08	0.	0.	0.
1987	1000000.	11.	12.	13.	1.	2.	0.07	0.21	0.	0.	0.
1988	1000000.	11.	12.	13.	1.	1.	0.05	0.13	0.	0.	0.
1989	1000000.	12.	12.	13.	0.	1.	0.04	0.12	0.	0.	0.
1990	1000000.	12.	13.	15.	1.	3.	0.08	0.22	0.	0.	0.
1991	1000000.	12.	13.	14.	1.	2.	0.05	0.14	0.	0.	0.
1992	1000000.	12.	13.	14.	0.	1.	0.04	0.10	0.	0.	0.
1993	1000000.	13.	13.	14.	0.	1.	0.02	0.07	0.	0.	0.
1994	1000000.	13.	13.	14.	0.	1.	0.02	0.07	0.	0.	0.
1995	1000000.	13.	14.	14.	0.	1.	0.01	0.06	0.	0.	0.
1996	1000000.	14.	14.	14.	0.	1.	0.01	0.06	0.	0.	0.
1997	1000000.	14.	14.	15.	0.	1.	0.01	0.06	0.	0.	0.
1998	1000000.	14.	14.	15.	0.	1.	0.01	0.06	0.	0.	0.
1999	1000000.	15.	15.	15.	0.	1.	0.01	0.06	0.	0.	0.
2000	1000000.	15.	15.	14.	0.	1.	0.01	0.05	0.	0.	0.

UNALASKASCIMP RUNS FOR ENCLAVE MODEL

UNIVERSITY OF ALASKA

MEMORANDUM 20 May 1982

TO: Chuck Cortese
Peter Cook
Jane Angvik
Jack Heesch

FROM : Gunner Knapp

SUBJECT: Unalaska SCIMP Runs for Enclave Model

Attached are the SCIMP outputs for use in the ENCLAVE model for Unalaska. Four separate cases were run, corresponding to different combinations of assumptions about the location of the enclave and the rate of bottomfish development.

The enclave is assumed to be either located at Makushin Bay or at (road connected to) Unalaska. If the enclave is located at Makushin Bay, then employment and population impacts will affect Unalaska only during the five-year exploration phase, with total OCS employment at 30 for five years. The effects upon Unalaska would be relatively small. In contrast, if the enclave were located near Unalaska and were connected to it by road, the employment and population impacts would be greater and would occur throughout the exploration, development, and operations phases.

There is considerable uncertainty about the rate of future bottomfish development at Unalaska. The "most-likely'" case, which we have adopted here, involves establishment of a major, year-round, shore-based industry with resident bottomfish employment rising to 3,721 by 2000. This case was developed by Jim Sullivan at the Alaska OCS office. The effect of this high bottomfish employment is to lower the relative impact of OCS since the assumed changes will be so great in any case. In order to investigate the effects of OCS in the absence of bottomfish development, I also ran a "no-bottomfish" case, in which it was assumed that no bottomfish industry develops--so that in the absence of OCS, there would be almost no change in the Unalaska economy. In this case, the relative impact of OCS would be much greater.

To summarize, the four cases are as follows:

1. Unalaska Enclave/Bottomfish
2. Makushin Enclave/Bottomfish
3. Unalaska Enclave/No Bottomfish
4. Makushin Enclave/No Bottomfish

The "Unalaska Enclave/Bottomfish" case is the most-likely case. The "Makushin Enclave/Bottomfish" *case* would result in the smallest impact, and the "Unalaska Enclave/No Bottomfish" case would result in the greatest impact.

For each case, six tables were produced. Explanations of the variables shown in each table are attached to the tables.

I am preparing a writeup of the many assumptions used for this SCIMP run *together* with the Nome SCIMP run. I will forward this writeup as soon as possible.

Enclosures

TABLE 1. POPULATION EFFECTS OF OCS DEVELOPMENT

These tables distinguish between three different kinds of population groups: permanent residents, fishing industry enclave residents, and OCS enclave residents. The fishing industry enclave residents are highly seasonal; the numbers here are year-round averages, so at some times the number of people at Unalaska will be much higher.

Variables

BRESPOP	Total base case permanent resident population (permanent resident population without OCS)
ORESPOP	Total permanent resident population with OCS
DRESPOP	Increase in permanent resident population due to Ocs
PDRESPOP	Increase in permanent resident population as fraction of base case permanent resident population
BTOTPOP	Base case total population (permanent residents and fishing industry enclave residents [annual average])
CAMPPOP	OCS enclave population
OTOTPOP	Total population with Ocs, including permanent residents, fishing industry enclave residents, and OCS enclave residents
SCAMPPOP	Increase in total population due to OCS enclave residents as fraction of base case total population

Table 1: Unalaska Enclave/Bottomfish Case

	BRESPOP	GRESPOP	DRESPOP	PDRESPOP	BTOTPOP	CAMPPOP	GTOTPOP	SCAMPPOP
0				0			0.	0.
1981	811.	811.	0.	0.	2042.	0.	2042.	0.
1982	885.	885.	0.	0.	2127.	0.	2127.	0.
1983	960.	962.		0.00	2215.		2277.	0.03
1984	1046.	1051.		0.01	2315.	127.	2447.	0.05
1985	1145.	1155.	10.	0.01	2431.	227.	2668.	0.09
1986	1264.	1265.	1.	0.00	2569.	27.	2597.	0.01
1987	1408.	1813.	405.	0.29	2735.	1375.	4515.	0.30
1988	1579.	2152.	573.	0.36	2930.	1551.	5054.	0.31
1989	1785.	2480.	695.	0.39	3163.	1700.	5558.	0.31
1990	2034.	2588.	554.	0.27	3443.	1302.	5299.	0.25
1991	2329.	2509.	180.	0.08	3772.	376.	4328.	0.09
1992	2683.	2781.	98.	0.04	4163.	376.	4637.	0.08
1993	3103.	3159.	56.	0.02	4623.	376.	5055.	0.07
1994	3608.	3640.	31.	0.01	5170.	376.	5578.	0.07
1995	4208.	4239.	31.	0.01	5815.	376.	6222.	0.06
1996	4873.	4904.	31.	0.01	6525.	376.	6932.	0.05
1997	5746.	5777.	31.	0.01	7444.	376.	7851.	0.05
1998	6766.	6797.	31.	0.00	8507.	376.	8914.	0.04
1999	7968.	8000.	31.	0.00	9748.	376.	10156.	0.04
2000	9385.	9416.	31.	0.00	11195.	376.	11602.	0.03

Table 1: Makushin Enclave/Bottomfish Case

	BRESPOP	ORESPOP	DRESPOP	FDRESPOP	BTOTPOP	CAMPPOP	OTOTPOP	SCAMPPOP
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	811.	811.	0.	0.	2042.	0.	2042.	0.
1982	885.	885.	0.	0.	2127.	0.	2127.	0.
1983	960.	961.	1.	0.00	2215.	27.	2243.	0.01
1984	1046.	1047.	1.	0.00	2315.	27.	2343.	0.01
1985	1145.	1146.	1.	0.00	2431.	27.	2459.	0.01
1986	1264.	1265.	1.	0.00	2569.	27.	2597.	0.01
1987	1408.	1409.	1.	0.00	2735.	27.	2763.	0.01
1988	1579.	1579.	0.	0.00	2930.	0.	2930.	0.
1989	1785.	1785.	0.	0.	3163.	0.	3163.	0.
1990	2034.	2034.	0.	0.00	3443.	0.	3443.	0.
1991	2329.	2329.	0.	0.	3772.	0.	3772.	0.
1992	2683.	2683.	0.	0.00	4163.	0.	4163.	0.
1993	3103.	3103.	0.	0.	4623.	0.	4623.	0.
1994	3608.	3608.	0.	0.	5170.	0.	5170.	0.
1995	4208.	4208.	0.	0.	5815.	0.	5815.	0.
1996	4873.	4873.	0.	0.	6525.	0.	6525.	0.
1997	5746.	5746.	0.	0.	7444.	0.	7444.	0.
1998	6766.	6766.	0.	0.00	8507.	0.	8507.	0.
1999	7968.	7968.	0.	0.	9748.	0.	9748.	0.
2000	9385.	9385.	0.	0.	11195.	0.	11195.	0.

Table 1: Unalaska Enclave/No Bottomfish Case

	BRESPOP	ORESPOP	DRESPOP	%DRESPOP	BTOTPOP	CAMPPOP	OTOTPOP	%CAMPPOP
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	727.	727.	0.	0.00	1907.	0.	1907.	0.
1982	745.	745.	0.	0.00	1925.	0.	1925.	0.
1983	762.	765.	3.	0.00	1942.	60.	2005.	0.03
1984	779.	784.	5.	0.01	1959.	127.	2091.	0.06
1985	795.	819.	23.	0.03	1975.	227.	2226.	0.10
1986	811.	812.	1.	0.00	1991.	27.	2019.	0.01
1987	826.	1236.	410.	0.50	2006.	1375.	3791.	0.36
1988	841.	1414.	573.	0.68	2021.	1551.	4145.	0.37
1989	855.	1561.	706.	0.83	2035.	1700.	4441.	0.38
1990	869.	1475.	606.	0.70	2049.	1302.	3957.	0.33
1991	883.	1160.	277.	0.31	2063.	376.	2716.	0.14
1992	896.	1121.	225.	0.25	2076.	376.	2677.	0.14
1993	909.	1124.	215.	0.24	2089.	376.	2680.	0.14
1994	921.	1133.	212.	0.23	2101.	376.	2689.	0.14
1995	934.	1143.	210.	0.22	2114.	376.	2699.	0.14
1996	946.	1153.	208.	0.22	2126.	376.	2709.	0.14
1997	957.	1163.	206.	0.21	2137.	376.	2719.	0.14
1998	969.	1173.	204.	0.21	2149.	376.	2729.	0.14
1999	981.	1183.	202.	0.21	2161.	376.	2739.	0.14
2000	992.	1193.	200.	0.20	2172.	376.	2749.	0.14

Table 1: Makushin Enclave/No Bottomfish Case

	BRESPOP	ORESPOP	DRESPOP	'FDRESPOP	BTOTPOP	CAMPPOP	OTOTPOP	SCAMPPOP
	0	0.	0.	0.	0.	0.	0	0.
1981	727.	727.	0.	0000	1907.	o,	1907.	o*
1982	745.	745.	0.	0*00	1925.	0.	1925.	0.
1983	7 62.	763. u	. .	.0.00	1942.	27+	1970.	0.0 1
1984	779.	780.	1.	0*00	1959.	27*	1987.	0*01
1985	795.	796.	1.	0.00	1975.	27.	2003.	0,01
198 6	811.	812.	1.	0 . 00	199 1,	27.	20 1 9 .	0 ! 0 1
1987	826 ,	827.	1.	0.00	2006.	27.	2034 .	0*01
1988	841.	841.	0*	0.	2021.	0.	20210	0.
1989	855	855,	0.	0.00	2035.	0*.	2035.	Q.?.
1990	869.	869,	-0.	-0.00	2049.	0,	2049.	0.
1991	883.	883.	0.	0,00	2063 .	0*	2063 .	0.
1992	8.96..	896.	0.	0.00	2076.	0.	2076.	0.
1993	?09.	9094	0.	0.00	2089.	0,	2089.	0.
1994	921.	921.	0,	0.00	21 01. "	0.	2101.	0*
1995	934.	934.	04.	-0,00	2114.	0	2114.	0*
1996	946.	946.	0*	0*	2126.	0.	2126.	0*
1997	957.	957.	0.	0*	21370	0,	2137.	0.
1998	9690	969.	0.	0*00	2149*	0.	2149.	0,
1999	981.	981 ,	-0.	-0.00	2161.	0.	21s1,	0.
2000	?92,	992.	0.	0*00	2172.	0,	2172.	0.

TABLE 2. LOCAL PERMANENT RESIDENT PARTICIPATION IN OCS EMPLOYMENT

Variables

BASEMP	Base case employed residents (employment without OCS)
BASEMPO	Base case employed residents who take OCS jobs
BASNO	Base case non-employed residents who take OCS jobs
BASRESO	Total base case residents who take OCS jobs
SBROBLF1	Share of base *case* residents who take OCS jobs in base case labor force, where labor force is defined. as base case employed residents plus base case non-employed residents who take OCS jobs
SBROEMP	Share of base case residents who take OCS jobs in base case labor force, where labor force is defined as base case employed residents plus base case non-employed residents who take OCS jobs
BASU	Baseline permanent resident unemployment (standard definition)
SBROBLF2	Share of base case residents who take OCS jobs in base *case* labor force, where labor force is defined in standard way as base case employed plus base case unemployed

Table 2: Unalaska Enclave/Bottomfish Case

	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	495.	0.	0.	0.	0.	0.	32.	0.
1982	528.	0.	0.	0.	0.	0.	34.	0.
1983	567.	6.	1.	7.	0.01	0.01	36.	0.01
1984	615.	11.	3.	14.	0.02	0.02	39.	0.02
1985	669.	20.	5.	25.	0.04	0.04	43.	0.04
1986	737.	2.	1.	3.	0.00	0.00	47.	0.00
1987	820.	124.	32.	156.	0.18	0.19	52.	0.18
1988	917.	160.	40.	200.	0.21	0.22	59.	0.20
1989	1036.	193.	48.	241.	0.22	0.23	66.	0.22
1990	1180.	158.	39.	197.	0.16	0.17	75.	0.16
1991	1350.	76.	18.	94.	0.07	0.07	86.	0.07
1992	1555.	76.	18.	94.	0.06	0.06	99.	0.06
1993	1799.	76.	18.	94.	0.05	0.05	115.	0.05
1994	2093.	76.	18.	94.	0.04	0.04	134.	0.04
1995	2441.	76.	18.	94.	0.04	0.04	156.	0.04
1996	2810.	76.	18.	94.	0.03	0.03	179.	0.03
1997	3347.	77.	17.	94.	0.03	0.03	214.	0.03
1998	3935.	77.	17.	94.	0.02	0.02	251.	0.02
1999	4632.	77.	17.	94.	0.02	0.02	296.	0.02
2000	5453.	77.	17.	94.	0.02	0.02	348.	0.02

Table 2: Makushin Enclave/Bottomfish Case

YEAR	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	495.	0.	0.	0.	0.	0.	32.	0.
1982	528.	0.	0.	0.	0.	0.	34.	0.
1983	567.	2.	1.	3.	0.01	0.01	36.	0.
1984	615.	2.	1.	3.	0.00	0.00	39.	0.
1985	669.	2.	1.	3.	0.00	0.00	43.	0.
1986	737.	2.	1.	3.	0.00	0.00	47.	0.
1987	820.	2.	1.	3.	0.00	0.00	52.	0.
1988	917.	0.	0.	0.	0.	0.	59.	0.
1989	1036.	0.	0.	0.	0.	0.	66.	0.
1990	1180.	0.	0.	0.	0.	0.	75.	0.
1991	1350.	0.	0.	0.	0.	0.	86.	0.
1992	1555.	0.	0.	0.	0.	0.	99.	0.
1993	1799.	0.	0.	0.	0.	0.	115.	0.
1994	2093.	0.	0.	0.	0.	0.	134.	0.
1995	2441.	0.	0.	0.	0.	0.	156.	0.
1996	2810.	0.	0.	0.	0.	0.	179.	0.
1997	3347.	0.	0.	0.	0.	0.	214.	0.
1998	3935.	0.	0.	0.	0.	0.	251.	0.
1999	4632.	0.	0.	0.	0.	0.	296.	0.
2000	5453.	0.	0.	0.	0.	0.	348.	0.

Table 2: Unalaska Enclave/No Bottomfish Case

YEAR	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
.981	422.	#.	0.	0.	0.	0.	27.	0.
.982	423.	o.	0.	0.	0.	0.	27.	0.
983	427.	6.	1.	7.	0.02	0.02	27.	0.02
[984	429.	11.	3.	14.	0.03	0.03	27.	0.03
.985	432.	19.	6.	25.	0.06	0.06	28.	0.05
.986	43[illegible].	2.	1.	3.	0.01	0.01	28.	0.01
.987	4[illegible]8.	92.	27.	119.	0.26	0.27	28.	0.26
988	441.	127.	38.	164.	0.34	0.37	28.	0.35
.989	444.	161.	49.	209.	0.43	0.47	28.	0.44
.990	446.	151.	46.	197.	0.40	0.44	28.	0.41
.991	450.	73.	21.	94.	0.20	0.21	29.	0.20
.992	452.	73.	21.	94.	0.20	0.21	29.	0.20
.993	454.	72.	22.	94.	0.20	0.21	29.	0.19
.994	458.	72.	22.	94.	0.20	0.21	29.	0.19
.995	460.	72.	22.	94.	0.20	0.20	29.	0.19
.996	462.	72.	22.	94.	0.19	0.20	29.	0.19
.997	465.	72.	22.	94.	0.19	0.20	30.	0.19
.998	468.	71.	23.	94.	0.19	0.20	30.	0.19
.999	471.	71.	23.	94.	0.19	0.20	30.	0.19
2000	473.	71.	23.	94.	0.19	0.20	30.	0.19

Table 2: Makushin Enclave/No Bottomfish Case

YEAR	BASEMP	BASEMPO	BASNO	BASRESO	SBROBLF1	SBROEMP	BASU	SBROBLF2
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	422.	0.	0.	0.	0.	0.	27.	0.
1982	423.	0.	0.	0.	0.	0.	27.	0.
1983	427.	2.	1.	3.	0.01	0.01	27.	0.01
1984	429.	2.	1.	3.	0.01	0.01	27.	0.01
						1	28.	0.01
1986	435.	2.	1.	3.	0.01	0.01	28.	0.01
1987	438.	2.	1.	3.	0.01	0.01	28.	0.01
1988				0.			8	
1989	444.	0.	0.	0.	0.	0.	28.	0.
1990	446.	0.	0.	0.	0.	0.	28.	0.
1991	450.	0.	0.	0.	0.	0.	29.	0.
1992	452.	0.	0.	0.	0.	0.	29.	0.
1993	454.	0.	0.	0.	0.	0.	29.	0.
1994	458.	0.	0.	0.	0.	0.	29.	0.
1995	460.	0.	0.	0.	0.	0.	29.	0.
1996	462.	0.	0.	0.	0.	0.	29.	0.
1997	465.	0.	0.	0.	0.	0.	30.	0.
1998	468.	0.	0.	0.	0.	0.	30.	0.
1999	471.	0.	0.	0.	0.	0.	30.	0.
2000	473.	0.	0.	0.	0.	0.	30.	0.

TABLE 3. RACIAL DISTRIBUTION OF PERMANENT RESIDENT POPULATION

Variables	
SNRESB	Share of Natives in base case resident population
SNRESO	Share of Natives in resident population with OCS

Table 3: Unalaska Enclave/Bottomfish Case

YEAR	SNRESB	SNRESO
0	0.	0.
1981	0.29	0.29
1982	0.28	0.28
1983	0.28	0.28
1984	0.27	0.27
1985	0.27	0.26
1986	0.26	0.26
1987	0.25	0.20
1988	0.25	0.18
1989	0.24	0.17
1990	0.23	0.18
1991	0.23	0.21
1992	0.22	0.21
1993	0.22	0.21
1994	0.21	0.21
1995	0.21	0.20
1996	0.20	0.20
1997	0.20	0.20
1998	0.19	0.19
1999	0.19	0.19
2000	0.19	0.19

Table 3: Makushin Enclave/Bottomfish Case

YEAR	SNRESB	SNRESO
0	0.	0.
1981	0.29	0.29
1982	0.28	0.28
1983	0.28	0.28
1984	0.27	0.27
1985	0.27	0.27
1986	0.26	0.26
1987	0.25	0.25
1988	0.25	0.25
1989	0.24	0.24
1990	0.23	0.23
1991	0.23	0.23
1992	0.22	0.22
1993	0.22	0.22
1994	0.21	0.21
1995	0.21	0.21
1996	0.20	0.20
1997	0.20	0.20
1998	0.19	0.19
1999	0.19	0.19
2000	0.19	0.19

Table 3: Unalaska Enclave/No Bottomfish Case

YEAR	SNRESB	SNRESO
1981	0.30	0.30
1982	0.30	0.30
1983	0.30	0.30
1984	0.31	0.30
1985	0.31	0.30
1986	0.31	0.30
1987	0.31	0.21
1988	0.32	0.19
1989	0.32	0.17
1990	0.32	0.19
1991	0.32	0.25
1992	0.33	0.26
1993	0.33	0.27
1994	0.33	0.27
1995	0.34	0.27
1996	0.34	0.28
1997	0.34	0.28
1998	0.35	0.29
1999	0.35	0.29
2000	0.35	0.29

Table 3: Makushin Enclave/t/o Bottomfish Case

YEAR	SNRESB	SNRESO
0	0.	0.
1981	0.30	0 * 3 0
1982	0*30	0*30
1983	0,30	0,30
1984	0.31	0,30
1985	0,31	0.31
1986	0*31	0*31
$-937	0,3 1	0,31
1988	0.32	0.32
1989	0.32	0*32
1990	0.32	0.32
1991	0 .32	0,32
1992	0.33	0.33
1993	0.33	0,33
1994	0,33"	0.33
1995	0.34	0.34
19 96	0.34	0,34
1997	0.34	0*34
1998	0.35	0.35
-lY99.	0. 3.5	0.35
2000	0.35	0.35

TABLE 4. BASE CASE RESIDENT SHARES IN TOTAL OCS EMPLOYMENT

Variables	
OCSOFFISH	Offshore OCS employment (assumed to be zero, as those employees will not travel through Unalaska and will not be hired from Unalaska)
OCSONSH	Onshore OCS employment
OCSTOT	Total OCS employment
BASRESO	Total base case residents who take OCS jobs
SBROOCST	Share of base case residents taking OCS jobs in total OCS jobs
SBROOCSO	Share of base case residents taking OCS jobs in total onshore OCS jobs

Note: This table directly reflects the assumptions made about industry demand for local labor. The symbol "0.13 E37" Indicates that the variable is not applicable.

Table 4: Makushin Enclave/ Bottomfish Case

YEAR	OCSOFFSH	OCSONSH	OCSTOT	BASRESO	SBROOCST	SBROOCSO
0	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.
1983	0.	30.	30.	3.	0.10	0.10
1984	0.	30.	30.	3.	0.10	0.10
1985	0*	30.	30.	3.	0.10	0.10
1986	0.	30.	30.	3.	0.10	0.10
1987	0*	30.	30.	3.	0.10	0.10
1988	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.
1990	0.	0*	0.	0.	0.	0.
1991	0*	0.	0.	0*	0.	0.
1992	0.	0.	0.	0.	0.	0.
1993	0.	0*	0.	0*	0.	0.
1994	0.	0*	0.	0.	0*	0.
1995	0.	0*	0.	0.	0.	0.
1996	0.	0.	0.	0.	0.	0.
1997	0.	0.	0.	0.	0.	0.
1998	0.	0.	0.	0.	0.	0.
1999	0.	0.	0.	0*	0.	0.
2000	0.	0.	0.	0.	0.	0.

Table 4: Unalaska Enclave/No Bottomfish Case

YEAR	OCSOFFSH	OCSONSH	OCSTOT	BASRESO	SBROOCST	SBROOCSO
0	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.
1983	0.	67.	67.	7.	0.10	0.10
1984	0.	141.	141.	14.	0.10	0.10
1985	0.	252.	252.	25.	0.10	0.10
1986	0.	30.	30.	3.	0.10	0.10
1987	0.	1531.	1531.	119.	0.08	0.08
1988	0.	1751.	1751.	164.	0.09	0.09
1989	0.	1941.	1941.	209.	0.11	0.11
1990	0.	1499.	1499.	197.	0.13	0.13
1991	0.	470.	470.	94.	0.20	0.20
1992	0.	470.	470.	94.	0.20	0.20
1993	0.	470.	470.	94.	0.20	0.20
1994	0.	470.	470.	94.	0.20	0.20
1995	0.	470.	470.	94.	0.20	0.20
1996	0.	470.	470.	94.	0.20	0.20
1997	0.	470.	470.	94.	0.20	0.20
1998	0.	470.	470.	94.	0.20	0.20
1999	0.	470.	470.	94.	0.20	0.20
2000	0.	470.	470.	94.	0.20	0.20

Table 4: Makushin Enclave/No Bottomfish Case

YEAR	OCSOFFSH	OCSONSH	OCSTOT'	BASRESO	SBROOCST	SBROOCSO
0	0.	0.	0.	0	.O.*.	0.
1981	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.
1983	0.	.300	30. -	3. -	0.10	0.10
1984	0.	30.	30.	3.	0.10	0.10
1985	0.	30.	30*	3.	0.10	0.10
1986	0.	30.	30.	3.	0.10	0.10
1987	0.	30.	30.	3.	0.10	0.1 0
1988	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0
1990	0.	0.	0.	0.	0.	0.
1991	0.	0.	0.	0.	0.	0.
1992	0.	0.	0.	0.	0 ·	0,
1993	0.	o*	0.	0.	0.	0.
1994	0.	0.	0.	o*	0.	0.
1995	0.	0.	0.	0	0.	0.
1996	0.	0.	0.	0.	0.	0.
1997	O*	0.	o*	0.	0.	0.
1998	o o	0.	0.	0.	0.	0.
1999	0.	0.	0.	0.	0	0.
2000	0.	0.	0.	0.	0.	0$.

TABLE 50 EFFECTS OF OCS ON DEMAND FOR SERVICES AND INFRASTRUCTURE

In a town where population is expected to grow so rapidly, there is no meaningful definition of base case "capacity" for services or infrastructure. Instead, these may be expected to vary with the size of the population. Thus, no attempt was made to compare demand with capacity. For a representative service (solid waste disposal, with units of 1/100s of an acre required per year for landfill) for which demand is -proportional to population, two different comparisons were made of demand with and without OCS. The first considers demand by permanent residents only. The second considers demand by all residents, including fishing industry and oil enclave residents. The variables PDDA and PDDB represent the fractional increases in population (or demand) for each of these population groups as a result of OCS development.

Variables

BASDA	Base case demand by permanent residents
OCSDA	OCS case demand by permanent residents
DDA	Increase in demand by permanent residents due to Ocs
PDDA	Fractional increase in demand by (population of) permanent residents
BASDB	Base case demand by total population (including fishing industry enclave residents)
OCSDB	OCS case demand by total population (including fishing industry and OCS enclave residents)
DDB	Increase in demand by total population due to OCS
PDDB	Fractional increase in demand by (population of) total residents (including fishing industry and enclave residents) due to OCS

Table 5: Unalaska Enclave/Bottomfish Case

YEAR	BASDA	OCSDA	DDA	PDDA	BASDB	OCSDB	DDB	PDDB
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	17.	17.	0.	0.	43.	43.	0.	0.
1982	19.	19.	0.	0.	45.	45.	0.	0.
1983	20.	20.	0.	0.00	47.	48.	1.	0.03
1984	22.	22.	0.	0.01	49.	51.	3.	0.06
1985	24.	24.	0.	0.01	51.	56.	5.	0.10
1986	27.	27.	0.	0.00	54.	55.	1.	0.01
1987	30.	38.	9.	0.29	57.	95.	37.	0.65
1988	33.	45.	12.	0.36	62.	106.	45.	0.72
1989	37.	52.	15.	0.39	66.	117.	50.	0.76
1990	43.	54.	12.	0.27	72.	111.	39.	0.54
1991	49.	53.	4.	0.08	79.	91.	12.	0.15
1992	56.	58.	2.	0.04	87.	97.	10.	0.11
1993	65.	66.	1.	0.02	97.	106.	9.	0.09
1994	76.	76.	1.	0.01	109.	117.	9.	0.08
1995	88.	89.	1.	0.01	122.	131.	9.	0.07
1996	102.	103.	1.	0.01	137.	146.	9.	0.06
1997	121.	121.	1.	0.01	156.	165.	9.	0.05
1998	142.	143.	1.	0.00	179.	187.	9.	0.05
1999	167.	168.	1.	0.00	205.	213.	9.	0.04
2000	197.	198.	1.	0.00	235.	244.	9.	0.04

Table 5: Makushin Enclave/Bottomfish Case

YEAR	BASDA	OCSDA	DDA	FDDA	BASDB	OCSDB	DDB	FDDB
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	17.	17.	0.	0.	43.	43.	0.	0.
1982	19.	19.	0.	0.	45.	45.	0.	0.
1983	20.	20.	0.	0.00	47.	47.	1.	0.01
1984	22.	22.	0.	0.00	49.	49.	1.	0.01
1985	24.	24.	0.	0.00	51.	52.	1.	0.01
1986	27.	27.	0.	0.00	54.	55.	1.	0.01
1987	30.	30.	0.	0.00	57.	58.	1.	0.01
1988	33.	33.	0.	0.00	62.	62.	0.	0.
1989	37.	37.	0.	0.	66.	66.	0.	0.
1990	43.	43.	0.	0.00	72.	72.	0.	0.
1991	49.	49.	0.	0.	79.	79.	0.	0.
1992	56.	56.	0.	0.00	87.	87.	0.	0.
1993	65.	65.	0.	0.	97.	97.	0.	0.
1994	76.	76.	0.	0.	109.	109.	0.	0.
1995	88.	88.	0.	0.	122.	122.	0.	0.
1996	102.	102.	0.	0.	137.	137.	0.	0.
1997	121.	121.	0.	0.	156.	156.	0.	0.
1998	142.	142.	0.	0.	179.	179.	0.	0.
1999	167.	167.	0.	0.	205.	205.	0.	0.
2000	197.	197.	0.	0.	235.	235.	0.	0.

Table 5: Unalaska Enclave/No Bottomfish Case

YEAR	BASDA	OCSDA	DDA	PDDA	BASDB	OCSDB	DDB	PDDB
0	0.	0.	0.	0.	0.	0.	0.	0.
1981	15.	15.	0.	0.00	40.	40.	0.	0.
1982	16.	16.	0.	0.00	40.	40.	0.	0.
1983	16.	16.	0.	0.00	41.	42.	1.	0.03
1984	16.	16.	0.	0.01	41.	44.	3.	0.07
1985	17.	17.	0.	0.03	41.	47.	5.	0.13
1986	17.	17.	0.	0.00	42.	42.	1.	0.01
1987	17.	26.	9.	0.50	42.	80.	37.	0.89
1988	18.	30.	12.	0.68	42.	87.	45.	1.05
1989	18.	33.	15.	0.83	43.	93.	51.	1.18
1990	18.	31.	13.	0.70	43.	83.	40.	0.93
1991	19.	24.	6.	0.31	43.	57.	14.	0.32
1992	19.	24.	5.	0.25	44.	56.	13.	0.29
1993	19.	24.	5.	0.24	44.	56.	12.	0.28
1994	19.	24.	4.	0.23	44.	56.	12.	0.28
1995	20.	24.	4.	0.22	44.	57.	12.	0.28
1996	20.	24.	4.	0.22	45.	57.	12.	0.27
1997	20.	24.	4.	0.21	45.	57.	12.	0.27
1998	20.	25.	4.	0.21	45.	57.	12.	0.27
1999	21.	25.	4.	0.21	45.	58.	12.	0.27
2000	21.	25.	4.	0.20	46.	58.	12.	0.27

Table 5: Makushin Enclave/No Bottomfish Case

YEAR	BASDA	OCSDA	DDA	PDDA	BASDB	OCSDB	DDB	PDDB
0	0.	0.	0.	0.	0.	0.	0.	0.
981	15.	15.	0.	0.00	40.	40.	0.	0.
982	16.	16.	0.	0.00	40.	40.	0.	0.
983	16.	16.	0.	0.00	41.	41.	1.	0.01
984	16.	16.	0.	0.00	41.	42.	1.	0.01
985	17.	17.	0.	0.00				
986	17.	17.	0.	0.00	42.	42.	1.	0.01
987	17.	17.	0.	0.00	42.	43.	1.	0.01
988	18.	18.	0.	0.	42.	42.	0.	0.
989	18.	18.	0.	0.	43.	43.	0.	0.
990	18.	18.	0.	0.	43.	43.	0.	0.
991	19.	19.	0.	0.	43.	43.	0.	0.
992	19.	19.	0.	0.00	44.	44.	0.	0.
993	19.	19.	0.	0.00	44.	44.	0.	0.
994	19.	19.	0.	0.00	44.	44.	0.	0.
995	20.	20.	0.	0.00	44.	44.	0.	0.
996	20.	20.	0.	0.	45.	45.	0.	0.
997	20.	20.	0.	0.	45.	45.	0.	0.
998	20.	20.	0.	0.00	45.	45.	0.	0.
999	21.	21.	-0.	-0.00	45.	45.	0.	0.
000	21.	21.	0.	0.00	46.	46.	0.	0.

TABLE 6. OCS EMPLOYMENT ASSUMPTIONS

These tables show the assumed direct employment associated with OCS. These figures include the shore base, oil terminal, and LNG plant and terminal employment figures given in Alaska Consultants, Inc., St. George Basin Petroleum Development Scenarios: Local Socioeconomic Systems Analysis, OCS Technical Report Number 59 (Anchorage, Alaska, OCS Office, May 1981), pp. 327-329. The figures reflect assumptions as to the fractions of total employment which would be hired locally in Unalaska if local labor is available. These assumptions are given below.

FRACTION OF OCS EMPLOYMENT WHICH RESIDES LOCALLY

Location of Onshore Operations Base	Phase	
	Exploration and Development	Operations
Unalaska	.1	.2
Makushin	.1	0

Variables

EDL (not used)

DDL OCS demand for local resident labor, operations phase

ODL OCS demand for local resident labor, operations phase

EIMPT (not used)

DIMPT OCS demand for imported labor (to be enclave residents), exploration and development phase

OIMPT OCS demand for imported labor (to be enclave resident), operations phase

Table 6: Unalaska Enclave/Bottomfish Case

YEAR	EDL	DDL	ODL	EIMPT	DIMPT	OIMPT
0	0.	0.	0.	0.	0.	0.
1981	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.
1983	0.	7.	0.	0.	60.	0.
1984	0.	14.	0.	0.	127.	0.
1985	0.	25.	0.	0.	227.	0.
1986	0.	3.	0.	0.	27.	0.
1987	0.	150.	6.	0.	1351.	24.
1988	0.	150.	50.	0.	1351.	200.
1989	0.	147.	94.	0.	1324.	376.
1990	0.	103.	94.	0.	926.	376.
1991	0.	0.	94.	0.	0.	376.
1992	0.	0.	94.	0.	0.	376.
1993	0.	0.	94.	0.	0.	376.
1994	0.	0.	94.	0.	0.	376.
1995	0.	0.	94.	0.	0.	376.
1996	0.	0.	94.	0.	0.	376.
1997	0.	0.	94.	0.	0.	376.
1998	0.	0.	94.	0.	0.	376.
1999	0.	0.	94.	0.	0.	376.
2000	0.	0.	94.	0.	0.	376.

Table 6: Makushin Enclave/Bottomfish Case

YEAR	EDL	DDL	ODL	EIMPT	DIMPT	OIMPT
0	0.	0.	0*	0.	0.	0.
1981	0.	0.*	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.
1983	0.	3.	0*	0.	27.	0.
1984	0.	3.	0.	0.	27.	0.
1985	0.	3.	0*	0.	27.	0.
1986	0*	3.	0.	0*	27.	0.
1987	0.	3.	0.	0.	27.	0.
1988	0.	0.	0.	0.	0.	0.
1989	0.	0.	0*	0.	0.	0.
1990	0*	0.	0.	0.	0.	0.
1991	0.	0*	0.	0.	0.	0.
1992	0.	0*	0*	0*	0*	0.
1993	0*	0.	0*	0.	0.	0.
1994	0.	0*	0.	0*	0*	0.
1995	0*	0*	0*	0.	0.	0.
1996	0*	0.	0.	0.	0.	0.
1997	0.	0.	0*	0*	0.	0.
1998	0.	0.	0.	0.	0.	0.
1999	0.	0*	0.	0.	0.	0.
2000	0.	0.	0.	0.	0.	0.

Table 6: Unalaska Enclave/No Bottomfish Case

YEAR	EDL	DDL	ODL	EIMPT	DIMPT	OIMPT
1981	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.
1983	0.	7.	0.	0.	60.	0.
1984	0.	14.	0.	0.	127.	0.
1985	0.	25.	0.	0.	227.	0.
1986	0.	3.	0.	0.	27.	0.
1987	0.	150.	6.	0.	1351.	24.
1988	0.	150.	50.	0.	1351.	200.
1989	0.	147.	94.	0.	1324.	376.
1990	0.	103.	94.	0.	926.	376.
1991	0.	0.	94.	0.	0.	376.
1992	0.	0.	94.	0.	0.	376.
1993	0.	0.	94.	0.	0.	376.
1994	0.	0.	94.	0.	0.	376.
1995	0.	0.	94.	0.	0.	376.
1996	0.	0.	94.	0.	0.	376.
1997	0.	0.	94.	0.	0.	376.
1998	0.	0.	94.	0.	0.	376.
1999	0.	0.	94.	0.	0.	376.
2000	0.	0.	94.	0.	0.	376.

Table 6: Makushin Enclave/No Bottomfish Case

YEAR	EDL	DDL	ODL	EIMPT	DIMPT	OIMPT
0	0.	0.	0.	0.	0.	0*
1981	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0*	0.
1983	0.	3.	0.	0.	27.	0.
1984	0*	3.	0.	0.	27.	0.
1985	0.	3*	0.	0.	27.	0.
1986	0.	3.	0.	0.	27.	0*
1987	0.	3	0.	0.	27.*	0.
1988	0.	0.	0.	0.	0.	0.
1989	0.	0.	0.	0.	0.	0.
1990	0.	0.	0.	0	-0.	0.
1991	0.	0.	0.	0.	0.	0.
1992	0.	0.	0.	0.	0*	0*
1993	0.	0.	0.	0.	0.	0.
1994	0.	0.	o*	0.	0.	0.
1995	0.	0.	0.	0.	0.	0.
1996	0.	0.	0.	0.	0.	0.
1997	0*	0.	0.	0.	0*	0.
1998	0.	0.	o*	0.	0.	0*
1999	0 *	0	0	0.	0.	0.
2000	0.	0*	0.	0.	0.	0.

APPENDIX I

INUVIK/TUKTOYAKTUK TRIP REPORT

TABLE Cl? CONTENTS

INUVIK/TUKTOYAKTUK TRIP REPORT

INTRODUCTION

Offshore exploration for oil and gas in the Canadian Beaufort Sea began in 1972. These activities have had significant impacts on a number of local communities in the McKenzie Delta region. The nature of these impacts upon social relations and native *culture,* and the methods used for dealing with these impacts are of considerable interest to the Alaska OCS Office and others involved in social impact assessment.

From July 9-11, 1981, C. Cortese, J. Angvik and J. Jorgensen visited the McKenzie Delta area; made observations; collected materials and documents; and interviewed several people in the communities of Inuvik and Tuktoyaktuk ("Tuk"). Earlier reports on the region had indicated that several impact mitigation measures had been taken to prevent adverse impacts on the Eskimo villages (Tuk in particular) and on Inuvik. These measures included:

a. isolating the Dome/Canmar industrial enclave at Tuk;
b. forming the Beaufort Seas Advisory Committee;
c. training and hiring great numbers of local people and contracting with local people for support services; and
d. forbidding alcohol.

The purpose of our trip was to examine firsthand, although in only a very short time, the social issues present in this OCS impact situation. We chose to focus *on* several specific issues: the concerns of longtime residents about population growth and social change; the nature of the "newcomers" who are attracted to the area by economic growth and opportunity; the nature of relations between industry and community, between natives and non-natives, and between longtime residents and newcomers in this multi-cultural environment; the effectiveness of local and native employment efforts; the consequences of industrial activity on native culture; and the interaction between the industrial support base (enclave) and the village.

It is believed that each of these six issues has applicability to the Alaskan OCS situation and each is associated with a set of impacts being addressed in the Enclave Study.

We attempted to speak with a variety of individuals including city officials, community influential and leaders, shopkeepers representatives of industry, representatives of organizations , people who represent conflicting viewpoints to the current leadership (they often become tomorrow's leadership), and the proverbial "man-on-the-street." It must be stressed that the very limited amount of time available did not allow for double checking information, for getting a sense of "majority opinion", or for drawing firm conclu-

sions.

No one we interviewed was able to provide details about the decision-making processes that led to specific siting or facilities use. Likewise, it was impossible to systematically cover the social impact inventory list produced for Technical Memo EN-2 in the short time provided. However, by comparing what we saw with the impact list we were able to learn much about the impacts thus far on the communities affected .

The information gathered by the field team and their cumulative expertise in acquiring and interpreting such information provide many insights for the CCS office that can be useful in future work.

BACKGROUND

This section provides background information on the history of CCS development in the Canadian Beaufort; the structure of government entities in the Canadian Arctic; the characteristics of the communities in terms of infrastructure , facilities and services, housing and economic development .

History of CCS Exploration*

The search for oil and gas has a long history in the Beaufort region. Early residents of the Mackenzie Valley used tar from local oil seeps for centuries. The first successful oil well in the area was completed sixty years ago at Norman Wells, 300 miles south of the Beaufort Coast.

In 1965 the first well was drilled in the Mackenzie Delta. Following the 1968 discovery nearby at Prudhoe Bay on the Alaska North Slope, the Beaufort region exploration was stepped up and oil was found at Atkinson Point on the Beaufort Coast in 19'70.

Artificial offshore islands to support drilling rigs were started in 1972 and sizeable oil and gas deposits have been found under the shallow parts of the Beaufort near the Mackenzie Delta.

Esso and Dome/Canmar are the major operators in the area. The Canmar drilling fleet includes 4 ice reinforced drillships, 8 icebreaker supply boats, a Class 4 icebreaker, a 600 foot cargo carrier, an environmental protection barge, a drilling barge, and several other support vessels.

Oil and gas have been found in all the wells with the most significant discovery at the Koapanoar site with an estimated production capability of 12,000 barrels per day.

Initial operations in the Beaufort Sea were conducted only during th-e open water and lasted for just 100

[1]Background information taken in part from Dick Hill "Beaufort Sea Communities Advisory Committee" presented to the 1980 Alaska Science Conference.

days . With improved equipment and icebreaker assistance the drilling season in 1979 was extended to 147 days with the last drillship leaving location on Novemeber 28th with 100% ice cover about 20 inches thick. At the time of our visit in early July there was still too much ice and drilling had not yet begun.

There are seven communities principally affected by the oil exploration (see map):

	1980 population (est.)	
Inuvik	2940	East side Mackenzie Delta
Coppermine	800	*Coronation* Gulf
Tuktoyaktuk	760	Kugmallit Bay, East of Macker
Aklavik	760	West side of Mackenzie Delta
Holman	330	West side of Victoria Island
Sachs Harbour	180	South coast of Banks Island
Paulatuk	160	Darnely Bay, Amundsen Gulf

The total population of these Beaufort communities is 5930 or about 15% of the Northwest Territories. There are several other communities involved to a lesser extent in the Beaufort exploration activities including Arctic Red River, Fort McPherson, Old Crow, Whitehorse, Yellowknife, and Hay River.

The main focus of the Beaufort offshore activities is *on* Inuvik and Tuktoyaktuk.

The original economy of the Beaufort region was based on, harvesting the renewable resources of fish, game, and furs. With the introduction of government services and resource exploration to the area in the 1950's, both the white population and wage employment for natives greatly increased. Tukoyaktuk also is the location of a DEW-Line site, built in the 1950's which also brought whites and some industrial wage employment into the community.

ESSO began its operations in the Beaufort Sea fifteen years ago. DOME began its operation only seven years ago. Whereas each had an impact on Inuvik and the surrounding area, neither was the direct cause of Inuvik's growth.


Banks Island
Sachs Harbour
Holman
Prince Albert Peninsula
Wollaston Peninsula
Dolphin and Union Strait
Cape Bexley
Cape Hope
Coppermine
Cape Kellett
Cape Lambton
Nelson Head
Amundsen Gulf
Cape Parry
Cape Lyon
Melville Hills
Paulatuk
Franklin Bay
Northwest Passage
Cape Bathurst
Baillie Islands
Cape Dalhousie
Russell Inlet
McKinley Bay
Atkinson Point
Hutchison Bay
Warren Point
Tuktoyaktuk Peninsula
Kugmallit Bay
Richards Island
Tuktoyaktuk
Reindeer Station
Inuvik
Aklavik
Fort McPherson
Arctic Red River
Herschel
Mackenzie Bay
Shallow Bay
Richardson Mountains
British Mts.
Old Crow
McDougall Pass
Carnwath
Iroquois
Colville Lake
Fort Good Hope
Norman Wells
Fort Norman
Fort Franklin
Mackenzie
Great Bear Lake
Smith Arm
Dease Arm
Fort Confidence
Echo Bay
Port Radium
Sawmill Bay
Camsell
Marian L.
Rae
Yellowknife
Great Slave Lake
Fort Resolution
Fort Providence
Hay River
Enterprise
Simpson Islands
Snowdrift
Franklin Mountains
Mt Clark
Wrigley
Horn Plateau
Willow Lake
Ft. Simpson
Jean Marie River
Nahanni Butte
Trout Lake
Fort Liard
Liard Range
Mackenzie Mountains
Mt Sir James MacBrien
Macmillan Pass
Mackenzie Mountains
Selwyn Mountains
Keele Peak
Mt Joy
Mt Selous
Logan Mountains
Frances Lake
Watson Lake
Fort Nelson
Muncho Lake
Summit Lake
Bonnet Plume
Peel
Snake
Wernecke Mountains
YUKON TERRITORY
Keno Hill
Elsa
Mayo
Stewart Crossing
North Fork Pass
Ogilvie Mountains
Mt Klotz
Mt Burgess
UNITED STATES
CANADA
Chalkyitsik
Fort Yukon
Yukon
Circle
Eagle
Chicken
Dawson
Granville
Clinton Creek
Faro
Ross River
Pelly Mountains
Carmacks
Pelly Crossing
Minto
Big Salmon
Teslin
Johnsons Crossing
Cassiar Mountains
Cassiar
McDame
Dease Lake
King Mt.
Mt Will
Telegraph Creek
Dawson Range
Aishihik
Whitehorse
Champagne
Carcross
Atlin
Atlin Lake
Nakina
Inklin
Skagway
Haines
Juneau
Tulsequah
Coast Mountains
Wrangell
Petersburg
Kupreanof Island
Admiralty Island
Chatham Strait
Kuiu Island
Prince of Wales
Sitka
Baranof Island
Chichagof Island
Hoonah
Gustavus
Glacier Bay
Cross Sound
Mt Fairweather
GLACIER BAY NAT MON.
Yakutat
Malaspina Glacier
Mt St. Elias
Mt Logan
Mt Lucania
Kluane
Burwash Landing
Destruction Bay
Haines Junction
Mt Kennedy
Snag
Beaver Creek
Northway
Tanacross
Tanana
Big Delta
Fairbanks
Nenana
Clear
Mt Hayes
ALASKA RANGE
Nabesna
Mt Sanford
Wrangell Mountains
Mt Blackburn
Mt Bona
Copper
Gulkana
Chitina
Saint Elias Mountains
Cape Yakataga
Chugach Mountains
Katalla
Cordova
Valdez
Whittier
Prince William Sound
Anchorage
Palmer
Cook Inlet
Skwentna
Farewell
Curry
Mt McKinley
MOUNT McKINLEY NAT. PARK
McKinley Park
Cantwell
Minchumina
Kantishna
Susitna
GULF OF ALASKA
Fairweather Ground
Alexander Archipelago
Christian Sound
Dickins Seamount
PACIFIC
NORTHWEST TERRITORIES
DISTRICT OF MACKENZIE
BEAUFORT SEA

Inuvik was created in 1955 by the federal government as an administrative-military town for the far northwest of the Northwest Territory. An RCMP base was established, as was a Canadian Forces Station (military base). The all-weather Dempsfer Road connects Inuvik to Dawson in Yukon Territory, while public ice roads connect it to Aklavik (west) and Tuktoyaktuk (north) from January through April.

Following a severe flood that destroyed the village of Aklavik in the late 1950's or early 1960's, the federal government sought to relocate the Aklavik Eskimos to Inuvik. According to our informants most residents were relocated to Inuvik, but within a couple of years most had returned to Aklavik, built homes on higher ground, and reestablished their trap lines.

The Beaufort exploration operations have the greatest impact on Inuvik and Tuktoyaktuk where most of the local employees come from and the local business expenditures are concentrated. There have been several community concerns related to the offshore activities in the areas of cultural change and environmental protection. The Beaufort Sea Communities Advisory Committee was formed by Canmar as a means to provide a two-way communication between the company and the communities. Canmar is very proud of their community relations efforts conducted through the committee and believes that large industrial projects operating in other frontier regions could use the committee as a model to assist community understanding and participation.

Government Structure

The local government structure in the Northwest Territories progresses from the smallest and least powerful unit, a "hamlet" to a "settlement", on to a "village", and "town" and a "city". The classification of "village' or above means that a local tax is imposed and the community has more than an advisory role in relation to the territorial government . The legal status of a "village" "town", or "city"allows the community to take on certain powers of its own to provide and operate, rather than service provision being the sole province of the territorial government.

Inuvik is a town which was established as a new community in 1955 when it was planned by "the Federal government to be a regional service center for the McKenzie River Delta area. Inuvik is located 60 miles south of the Beaufort Sea and 675 air miles north of Yellow Knife. It recently has been road connected to the rest of Canada by the Dempster Highway which was completed in 1979.

The current population of 2,940 people are Inupiat Eskimo, Athabaskan Indian and Caucasian. In anticipation of the McKenzie River pipeline project, the population of Inuvik grew to almost 4,000 people in 1978, but has returned to its more constant level of 3,000 since the project was not built.

The town government is in the process of developing a comprehensive development plan which will be phased for future populations of 5,000; 10,000 and 15,000 people per phase.

INFRASTRUCTURE - INUVIK

The infrastructure of Inuvik in July, 1981 consistedtih of the following facilities and operations:

Power: Operator , Northern Canada Power Commission (NCPC)- Crown Corporation Diesel Generator - Capacity 14 1/2 megawatts; rate 14.03 cents per kwh plus .71 cents per kwh levy

Water : Piped (Utilidor) and contracted Truck delivery - Federally built and operated

Sewer: Piped (Utilidor) - Federal government.

Fuel: Gasoline No. 1 - 42.8 cent litre (1 .95 gallon)
No. 2 - 32.8 cent litre (1 .49 gallon)

Heating Gil (Bulk) - 19.3 cent litre Diesel Fuel (Bulk)24 cent litre

Aviation Gas - 80/87, 100/130 $1.77 gallon; Turbo $1.51 gallon

Police - Royal Canadian Mounted Police (RCMP)
Subdivision Commanding Cfficer: Inspector K. D. Gerhardt
Personnel: 15 men, Air Detachment: 2

Justice of the Peace - 2

Fire Department - Volunteer, complement of 25 persons
- 2 pumpers, 1 tanker, 1 dry chemical truck, 1 support unit

Medical Facilities - Inuvik General Hospital, 65 beds (Phone: 979-2955
Public Health Clinic
Extended Care Unit, 14 beds
Certified Nursing Assistant (CNA) Program
Transient Centre
Staff: 7 doctors, 1 dentist

Education Facilities - Day Care Centre
Pre-School Association
Sir Alexander Mackenzie School - Elementary (K - 6)
Samuel Hearne Secondary School - 7 -12

Grollier Hall - Student Residence
" Hostels"

Churches - Anglican, Baha'i, Baptist (2), Jehovah's Witness, Pentecostal, Roman Catholic

Library Semites - Inuvik Centennial Library
Lending Library, Reference Section, Periodicals, Newspapers, Kids' Tapes, Tourist Information

Banks - Canadian Imperial Bank of Commerce and Bank of Montreal

Recreation Facilities - Dave Jones Community Centre - Arena, Banquet Hall, Curling Club
School Ball Field - Men's and Women's Fastball; Minor Ball
School Gyms - basketball, volleyball, indoor soccer, badminton
Cross Country Ski Trails, Ski Instruction
Rifle, Hand Gun, Archery Range and Club House
Stock Car Club and Track

Canadian Forces Station - CFS Inuvik - 200 personnel

Transportation Facilities

Airports - Inuvik International, 6000 feet paved, all weather--Federally owned and operated.
Intown - gravel - private and small commercial aircraft
Shell Lake - float planes and winter ice strip

Airlines - Pacific Western Airlines - daily flights south
Trans North Turbo - Scheduled flights to Whitehorse

Charter Companies - Aklavik Flying Services, Ram Air, Aklak Air, Kenn Borek Air, Inuvik Coastal Airways

Helicopter Services - Okanagan Helicopter, Shirley Helicopter

Water Transport from Hay River, NWT Season: June to October

Northern Transportation Company Limited - Crown Corporation

Arctic Transportation Limited

Road Transport

With the opening in 1979 of the Dempster/Mackenzie Highway, Inuvik has become the northern terminus of the highway which links the ALCAN Highway, via the KLONDIKE Highway, to Whitehorse, to Southern Canada, and the Alaska Ferry Service at Haines and Skahway, Alaska, to Vancouver, B.C. and Seattle, Washington.

The Dempster/Mackenzie Highway also links Inuvik with Arctic Red River and Ft. McPherson, N.W.T. on a year round basis with the exception of break-up and freeze-up periods.

Local Transport - 1 taxi company, 7 major long haul Trucking Companies, and a Charter Bus Service

Communications

Telephone system - Northwestel - Scatter wave

Television - C.B.C. Satellite service
B. C. T.V.

Radio - Canadian Broadcasting Corporation (CBC)

Mail Service

General Post Office - Counter and Box Service
Daily air service
Newspaper - The DRUM - weekly

CLIMATE

Temperature: July mean high 19.7C
mean low 8.2
January mean high -26.1C
mean low -35.7
Average: -9.6

Precipitation: Rainfall 110.0mm (4.33 in.)
Snowfall 155.15mm (65.4 in.)
Total : 276.1mm

Prevailing Winds: Easterly 5.2 knots (6mph)

RESOURCES

Minerals - bentonite prospects
Oil and Gas - 40 miles north - Parsons Lake Gas Field
Fish - Lake Trout, Northern Pike, Whitefish, Arctic Char
Game and Fur Bearing Animals - fox, muskrat, mink, martin, beaver, caribou, reindeer
Game Birds - Ptarmigan, geese, ducks

TOWN ROAD PAVING PROJECT

In 1978, the Town of Inuvik commenced a road paving (cold mix) program that within 3 years will see most roads in the residential and business sections paved. Concrete sidewalks are being installed on Mackenzie Road, the Town's main artery.

Housing and Local Business

We walked through Inuvik locating the banks, hotels, drug stores, grocery stores, dry goods stores, restaurants, bars, library, schools, RCMP headquarters military base, Royal Canadian Scientific Research Institute, oil-related service and support industries, airports (one in town, two near town), docks for barges *along* the river, community indoor hockey rink, softball field, public camp ground and the like.

Practically all housing (we learned of two or three exceptions), and all utilities and utilidors were constructed by, are owned by, and are maintained by the federal government. Persons apply to the federal government for housing, regardless of their occupation or their employer. We observed several housing areas in Inuvik comprising newer, attached housing. Eskimos, Athapaskans, and whites seemed to reside side-by-side, but in the older areas of single family dwellings only Indians and Eskimos resided. At the end of our first day we had the impression that Inuvik was similar to energy boomtowns in the western United States in some ways, to wit: the population was transitory and appeared to outrun the services available to it; native people were not conspicuously employed and many were conspicuously inebriated; traveling around town was inconvenient; streets were muddy; recreational facilities were few (hockey rink and a softball field); food prices were very high; public bars and public drinking was high relative to the population; police (RCMP) were firm and unnecessarily rough with inebriated natives; and there were evidences of houses that had burned and been evacuated.

What was noticeably different about Inuvik from western boomtowns that are located near Indian reservations was the organized nature of the housing tracts; the lack of trailer-

mobile home parks; the obvious presence of the federal government in many affairs of the town; the isolation of the town from other service centers; and a feeling, for want of a better term, of some continuity among chaos. We assumed that workers for DOME and 1SS0 at Tuk maintained their families at Inuvik. That assumption was wrong.

Economic Development

All land and resources outside of the municipal boundaries are governed by federal agencies. Therefore, any decisions regarding access to resources or location of facilities to support industrial development outside of the city limits are made by the federal government. There is no requirement for consultation between the local government and the industry prior to or during the development of a resource. However, informal relationships do exist wherein committees are established to discuss various projects, such as a future Barite development which is a substance used in the production of drilling mud.

The companies operating in the Beaufort Sea do not have any warehousing or storage areas in Inuvik. However, city officials are encouraging operators such as Dome petroleum, ESSO and Gulf to locate facilities in Inuvik in an effort to stimulate the local economy. Currently the economy is composed largely of government employment and service industry employment such as hotels, restaurants and shops. The Mayor estimates that approximately 90 Inuvik residents work 2 weeks on and 1 week off at the service base at Tuktoyuktuk.

The government presence includes not only the federal operators of the utilities and resource managers, but also a 200 person military base, a federal hospital, territorial government personnel and local government employees. The secondary school serves the outlying 12 villages so that the village high school students reside in "hostels" in Inuvik.

INFRASTRUCTURE - Tuktoyaktuk

The infrastructure of Tuktoyaktuk currently consists of the following:

1. Fresh water - Dome contracts with the city who in turn contracts with Jim Cockney to furnish fresh water from the lake. Volume - unknown.

2. Garbarge - Solid waste Dome uses the city landfill and has provided a D-4 caterpillar to assist the city with moving the garbage. Dome proposes to encourage the city to develop a new landfill and charge a user fee. Dome anticipates their share to be 90% of use.

3. Land - Dome currently has 30 acres for this service base which they leased from the Federal government. In an effort to expand the operation, they have constructed

a gravel island in Kinley Bay, north of Tuk, and will begin operations there next summer. Tuk will then become the administrative center as opposed to its current operational role.

4. Electricity - Northern Canadian *Power* Company, (NCPC) a crown corporation, is the operator of the power plant for the community and the service base. The power is unreliable and Dome has a back-up system of generators.

5. Sewage - The base uses Tuk's sewage lagoon. The city is in the experimental stages of a treatment plant which Dome will use when it becomes operational.

6. Air strip - There are 2 air strips. The municipal strip is 3,500 feet by 100 feet and was built for the DEW Line and is operated by the ministry of Transport. In addition Dome built a new strip to accommodate jets and it is 5,000 ft. by 150 ft.

7. Dock - This facility is operated and owned by the crown corporation of Northern Transport Corporation Ltd. (NTCL) and operates at a loss even with the business generated by the service base.

INTERVIEWS AND OBSERVATIONS

Concerns About Growth and Its Impacts

The Mayor believes that the petroleum development is beneficial to Inuvik and that the attitude of Dome Petroleum co. in particular is very sensitive to local needs of "northerners".*

She cited Dome's grant to the town of Inuvik in support of building the recreation center, their contribution to the alcohol prevention programs, and establishment of a day care center as evidence of their social consciousness. She expressed concern about Gulf Oil Co. who recently announced plans to develop a service base in the Beaufort at McKinley Bay near Dome's new island enclave. The Mayor indicated that Gulf personnel had not come and talked with local people before making their decision and that this was contrary to her perceptions of how Dome had interacted with the community.

Socially she indicated that the town was completely racially integrated and that there were no divisions between Native people and Caucasians. The vast majority of housing

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[2]The term "northerner'! will be discussed later. We were first led to believe the term referred to the Inuvialuit and Athapaskan people but its usage is more difficult to define.

in Inuvik is privately constructed and subsidized by the Federal government. There are approximately 20 privately owned single family homes in Inuvik. The Mayor's perspective of the community was that Inuvik is a good place to live and petroleum development has significantly enhanced the quality of life because it has provided jobs and commerce to this regional center. A contrasting viewpoint is represented in our interview with Mr. Button.

David Button is a former Inuvik High School counselor and present owner of Fireweed Ltd., a multi-faceted business which offers graphics presentations, writing and editing and employment placement for local people. He is a 14 year resident of Inuvik, the first seven of' which he was the high school counselor. As a result he personally knows all local people between the ages of 24 and 32 in the 12 villages served by Inuvik High School (He and his wife built the two geodesic domes next door to the Hill's house).

We interviewed Mr. Button on the flight to Tuk. He had been engaged by Dome to prepare a slide show for use with new workers at the service base to inform them about the culture and life style of Tuk residents. Mr. Button indicated that he had testified during the Berger Inquiry and had supported a 10 year moratorium on exploration and development in the Beaufort area because his knowledge of the surrounding villages led him to believe that the communities were not prepared for the impact of development. Among the issues he was concerned about then, and is currently concerned about were:

1. Rapid in-migration of Caucasion people who would not respect the traditional lifestyle of the Inuvialuit Eskimos.
2. Housing shortages in Tuk with at least a two year lag between identifying the need and constructing the housing.
3. Inadequate information about the effects of OCS activity *on* marine mammals.
4. Lack of training programs designed to promote employment skills to allow local residents an opportunity for jobs with the industry.
5. Influx of negative influences such as alcohol and drugs.
6. Potential interracial conflicts - with particular emphasis on white men pursuing native women.

One observation he offered about Inuvik was that the Hill family represents the extreme attitude in favor of development in Inuvik. He believes that there are many residents there who are concerned about the negative impacts of growth on the region, particularly on the villages. However, he did feel that the city council is currently composed of people who are more development-oriented than concerned about impacts.

He also indicated that he thought Inuvik to be a racially integrated community with the exception of a handful

of alcoholic native people who were not relating to either white or native groups. When asked what happens to those individuals he indicated that they were often supported by relatives but most often ended up at the hospital for treatment of physical maladies associated with alcoholism such as liver failure or *abrasions from* falling down.

Newcomers

Upon arrival at Inuvik in the afternoon of July 9, 1981, we called for a taxi. The driver was a Yugoslavian emigre who owned commercial-industrial property in Inuvik which was leased to one of DOME'S sub-contractors. The cab driver was speculating on other land in Inuvik, hoping that a pipeline would be constructed from the Beaufort Sea through Inuvik. The cab driver, who had resided intermittenly in Inuvik for four years, was lured to the place by his brother, a carpenter who worked on general construction in the area..

The Yugoslavs (Serbians) had moved to Inuvik for *work* and high pay, but both became entrepreneurs and speculators earning their living from oil industry exploration and government building and maintenance projects, but not directly from the oil companies (DOME, ESSO, and others).

The cab driver was single and had left Inuvik on several occasions for periods of up to six months, working in Alberta. and British Columbia. He returned so as to earn more money than he could earn further south, and because he knew a woman in Inuvik. Apparently the Yugoslavian's reason for being in Inuvik was similar for many East European, European, and Irish emigres, although we spoke to only two others during our stay. He sought employment and relatively high earning power. The cause for his relocation there was his brother. For others, too, it was hearing about Inuvik through relatives or friends.

The emigres to whom we spoke had no intention of remaining in Inuvik, to establish their homes there, to raise their children there, and so forth. They intended to leave after they had accumulated what they considered to be sufficient funds to allow them to establish themselves someplace else in Canada.

A second person to whom we spoke on July 11, 1981 was a French Canadian woman from Quebec. She had owned and operated a "ladies shop" in Vancouver, B.C. She learned about Inuvik and the money to be earned there from numerous people in B.C. As she put it, "ask anyone in B.C, everyone knows about Inuvik". The woman sold her business and moved to Inuvik where she works daily at two jobs: teaching French in the public schools, and as a cocktail waitress at the most successful bar in town. She had been in Inuvik for sixteen months and intended to stay for another twenty months. The teacher-cocktail waitress lived in an apartment above the restaurant bar at which she was employed paying rent to her employer.

When asked why she though most people relocated in Inuvik, she said "for the money." She then volunteered that no one intended to stay beyond three years, at which time they would have accumulated sufficient funds to buy a house elsewhere and get established.

When asked what difference she noted between the way of life in Inuvik and the ways of life in Vancouver and Quebec, she said "People drink more here." According to her, people who had never been drunk before became regular habitues of the local bars an-d heavy drinkers" . ..because they don't have anything else to do, or to spend their money on."

'The French Canadian woman's impressions were confirmed by several other people to whom we spoke during our stay, including a waitress (formerly a school teacher in Inuvik) whose home was in Edmonton, a clerk in a clothing store and a clerk in a drug store. The teacher-cocktail waitress was single, as was the waitress. Both worked at two jobs; were there to accumulate and save money; thought Inuvik was a hectic, rough and tumble place; said people stayed there only three years; and neither intended to stay nor regarded it as a home community. Both of the clerks were married and their husbands were also employed. lath intended to leave at the end of three years. Although both said that it was a "fun place", neither regarded Inuvik as comprising a community.

Unlike Anchorage where many permanent residents, from BLM employees and attorneys, to charter pilots and entrepreneurs-- vacation in temperate areas for some period each winter, such is not the case for Indians and Eskimos in the McKenzie Delta nor the case for whites who had relocated in Inuvik for their three year stints. The former, perhaps, had neither the desire nor the means to vacation in the south , while the latter, perhaps, were saving and delaying their gratification.

Native/White Relations

Although we saw young (ages 18-35) Eskimos, Indians, Metis, and whites mingling in bars and restaurants, suggesting that racial-ethnic-cultural schisms were not deep and firm, the boisterous nature of the occasions suggested the quest for fun without responsibility and, except for some members of softball teams, people who possessed rather shallow networks of attachments in different settings and activities. The bars seemed to be loci of catch-as-catch can associations and frenetic behavior, not neighborhood bars where people drink and converse.

At breakfast on the second day the Eskimo Inn's cafeteria was filled with (1) elderly sightseers who had spent the ni ht in the Inn and were preparing to visit Tuktoyaktuk: (27 about eight youthful Eskimo men and women who had been drinking through the night; and (3) several men and women preparing to go to work. The cook and cashier were white . The busboy was an Eskimo man in his 50s and 60s.

The white employees were curt to the Eskimo man, a voluble fellow, who ordered breakfast for all eight, collecting $21 from him for a $27 bill. The drunk Eskimo could not deliver the $6 required to pay for the complete order. The cashier kept the $21, telling us she had his money, but the cook did not cook $21 worth of food. Rather, after 20 minutes or so the Eskimos left without making a fuss.

Noel Broom, the Northern Business Manager for DOME Petroleum, Ltd., maintains offices in Inuvik, Tuktoyaktuk, and Calgary. We spoke to Broom in Inuvik. The following day he arranged to have our group flown to Tuk.

Broom has vast experience in marine oil exploration, yet for DOME's operations in Inuvik and Tuktoyaktuk his marine skills seem to be secondary in importance to his public relations and social engineering skills. In conjunction with Dick Hill, a DOME consultant, former mayor of Inuvik, former director of the Royal Canadian Scientific Research Operation at Inuvik, and, it would seem, an eminently successful booster of Inuvik commerce, Broom established the Beaufort Sea Advisory Council (BSAC) also referred to as the community Advisory Committee.

According to Broom the Beaufort Sea Advisory Committee, although formed by DOME in conjunction with Dick Hill, is a representative group of 15 native leaders of which two are elected by the hunters and trappers association from each of seven villages in the Inuvialuit area of the western Canadian Arctic Sachs Harbor, Holman Island, Paulatuk, Tuktoyaktuk, Inuvik, and Aklavik. The way in which the 15th member was appointed was not explained. Dick Hill is advisor to the group. Broom's explanation as to how the members were elected was not confirmed by Eskimos that we interviewed.

Broom's point about the BSAC was that DOME had done an excellent job in controlling relations between natives and non-natives , yet he eschewed the term "native" for reasons explained below. He said that SOHIO as well as Alaskan corporations had sent representatives to see how well things were managed.

Broom's story went like this: during the first two years of operation in Tuktoyaktuk, 1974-1975, DOME allowed its employees to enter Tuk, to eat, drink, purchase goods, and so forth. Negative incidents related to alcohol were commonplace, and Tuk residents were disturbed, so much so that they developed hostile, anti-business attitudes and anti-DOME behavior.

In 1976, Broom did the following: (1) Tuk was placed off limits to DOME employees; (2) DOME was made a dry camp (no alcohol) and baggage and personal searches for alcohol and drugs of entering and returning employees were inititated and maintained; (3) drug sniffing dogs were used to search DOME employees; (4) depending on their contracts and the amount of time that employees continuously had been on the jobs--up to 8 weeks-- on "weeks-off employees were flown directly to the city in which they were hired (Calgary, say), or even to Halifax or Vancouver, thus avoiding Tuk and

Inuvik; (5) recreation facilities, tours at the DOME base, and boat tours of the exploration operation at Sea were made available to residents of Tuk on Sundays; (6) residents of Tuk who gained employment at DCME were allowed to return home at the end of each shift; (7) where possible, subcontracts for goods and services were led to small "northern" businesses;* (8) Broom, his consultants and employees began attending every hamlet council (not hunter-trapper association) meeting at Tuk, many at Inuvik (a white-dominated town), and at least two per year in all other towns that had councils in the region as far to the south as Hay river and Yellowknife; and (9) created the BSAC through which DOME could air its grievances if it has problems with Eskimos, and through which Eskimos or their communities could air grievances and seek solutions to problems created by DOME.

Broom did not tell us (nor did Dick Hill), (1) that BSAC members were removed from office if they caused problems for DOME as was the case for a female representative from Tuk in 1981; (2) that each member was paid $125 per day expenses for every BSAC meeting they attended; and (3) that members were also remunerated for their expense-paid tour of the Shetland Islands (North Sea) conducted by DOME in 1980. Other international trips are planned.

It was Broom's opinion that as a result of DOME'S actions (1) alcohol abuse in Tuk had decreased in the past 5 years; (2) Tuk had changed from anti-development to a more supportive position in regards to development, and (3) that local businesses and residents have benefitted from employment by, and sub-contracts from, DOME.

Native Employment

An interesting point in Mr. Broom's discussion turned on our questions about whether Eskimos and Indians (natives) were hired, whether DOME has a search program to hire more natives, whether natives received pay equal to non-natives for similar jobs, and whether natives were trained for better jobs and given advancements. Broom refused to use the term "native", saying that the term caused problems and was inherently discriminatory because it distinguished Indians and Eskimos from others. He said something like, "Up here we are one people working together without noticeable boundaries and noticeable differences and we want to nourish that condition." (Dick Hill said something very similar to this on several occasions after that evening).

In place of "native" Broom substituted "northerner", which he refused to define. He said, however, that "northerner" was not restricted to natives, reiterating that he did not want to use "natives", averring that "native" could not be defined. A northerner, it seems, is someone who resides in the Northwest Territory or Yukon Territory for some

[3] to be explained below

unspecified period of time. (The Eskimo leaders of COPE asserted that a "northerner" is a six month resident of the territories).

In any event, Broom alleged that in 1980 380 of DOME'S 1148 employees were "northerner", 200 were regular and 180 were casual. He also claimed that DOME's sub-contractors employ 70-80 northerners. While visiting the DOME operation the following day we saw several Eskimo chamber maids and janitors, but no natives working at any technical or quasi-technical task (telex, radio operator, supply room, clinic, dispatcher, etc.). At the lunch room, natives, mostly women and comprising seven percent of the more than 200 employees eating there, sat together at two tables.

Our observations suggest that (1) few natives are employed by DOME; and (2) Eskimos are primarily hired by DOME for service jobs, unskilled jobs, and on a casual basis. The "northerner" term is not genuine, but rather a public relations device. Broom claimed that DOME sought to hire enough northerners to account for 20% of the regular labor force. At 234 of circa 1150 employees in 1981, Broom implied that the quota had been achieved; yet he demurred when asked for personnel figures, saying that if DOME published them the personnel department might stop hiring northerners.

So far as encouraging northern businesses, we learned the following from Broom and others: (1) E. Gruber, a Tuk Eskimo, holds certain hauling, grading, and crane contracts (trucks and other heavy duty equipment) with DOME, but Grubers' operation began at least as early as the DEW line development at Tuk in the early 1950's; (2) a Tuk Eskimo man holds a contract to transport visitors and vendors from the airstrip to DOME, from DOME to Tuk, and such--his fleet includes two vans and an extra driver; (3) a Tuk Eskimo man owns a water truck and holds a three year contract to siphon water from a lake and deliver the water to DOME whenever it is required; and (4) a Tuk Eskimo man, father of the water hauler and possessor of two mortgaged vans, once held but subsequently lost the contract to transport visitors, vendors and some employees at DOME.

Broom claimed that 153 northern businesses were subcontracted by DOME for $23 million (Canadian) during 1981, saying that DOME would rather pay more for northern businesses than pay less to their more competitive southern counterparts. There was little evidence that any businesses other than the aforementioned were Eskimo owned or controlled.

When asked about the legitimacy and authority of the BSAC to represent natives on the subject of oil developments along the coast, Broom said that COPE (Committee for Original Peoples Entitlement) and the BSAC "seem to be at odds over that representation." Inasmuch as DOME created BSAC, pays the members, and is accused of expelling intractable members (members appear to be self-selected), it is reasonable to surmise that some natives and native organizations may dispute BSAC authority, representativeness & decisions.

Doug Irish is the personnel supervisor in charge of hiring natives for ESSO. Mr. Irish is an Eskimo and a native of Aklavik, an Eskimo village 30 miles to the southwest of Inuvik on the west channel of the MacKenzie River. Aklavik can be reached by air. Mr. Irish maintains his family, home boat, and snowmobile in Aklavik and returns there on his days off. His wife is an Athapaskan. Mr. Irish has been employed by ESSO for twelve years and worked his way from Operator 1--the most menial level of permanent employment-- to Operator 4, where he doubled as counselor to natives. Recently he was moved from the ESSO oil rigs in the Beaufort Sea and given his current job. The specific charge is to hire sufficient natives to comprise 60% of the ESSO labor force in the Beaufort Sea.

Mr. Irish claimed that of the circa 200 ESSO employees, half were natives. But it was hard to pin down what that half did, how often they did it, how much remuneration they received, and who they were. For instance, in general discourse Irish carefully distinguished natives (Eskimos) from Indians (Athapaskan). Yet when talking about "native" employees he referred also to "northerners" as opposed to "southerners". He did not define "northerners", but implied that they were natives--a group composed of Eskimos and Athapaskan. When I asked whether natives excluded whites, he said yes, leading us to believe that 50% of ESSO's employees were Eskimos or Indians from the nearby villages (600 mile radius) of the Canadian Arctic and Sub-Arctic.

Mr. Irish told us that many natives (number unspecified) were temporary employees who returned to the same unskilled jobs year after year, received no perks or benefits beyond salary, room and board while on the job, and left so as to pursue hunting and fishing for subsistence and to work their trap lines. Other natives fitted into the pre-permanent employee category in which they were tested at menial and unspecified operator jobs attending operators of various kinds of equipment. If they proved to be adequate and dependable employees they could be hired on a permanent basis, entitling them to some unspecified benefits, but not necessarily retirement benefits, depending on the length of their employment. It was possible for "natives" to acquire skills at operating various kinds of equipment, from brooms and shovels to drills, loaders, cats, even cranes, although no native was a crane operator. Except for crane operators, operator levels were 1-4 and paid from circa $7.90 to $10.90 (Canadian) per hour. Irish mentioned other skill categories, such as mechanics, electronic technicians, bookkeepers, and the like, but no natives were employed in those skills.

Although peering through a glass darkly, it looks as if Eskimos and Indians are relegated to menial skills that can be learned by observation and precept. Mr. Irish may be one of few exceptions to the norm. Moreover, the sea exploration operations need temporary, low paid, menial help, as well as permanent, semi-skilled and low skilled labor. Na-

tives can, and perhaps do, fill those jobs. They live in the area, are adjusted to its rigors, and when willing to do so, can supplement their subsistence and trapping economic base with wage labor. Some, such as Mr. Irish, undoubtedly supplement their wage income with subsistence and trapping pursuits.

In contrast to the in-house procedures of hiring natives by ESSO and DOME, Mr. Button told us he had trained and placed 28 men and 20 women in jobs at the service base. He monitors their -progress closely and assists the individuals with problems related to family separation or family emergencies. He offered this employment service to the companies, DOME and ESSO, who contract with him to provide the workers . He has only had one person drop out in 2 years and believes this low turn-over rate to be a function of his personal involvement with the workers.

In Tuk we spoke with Jim Cockney, an Eskimo and a Tuk resident all his life and his wife, Linda, a white former missionary who has lived there 14 years. They own the Reindeer Grill, the only restaurant in town and Mr. Cockney is the past president of the Hunters and Trappers Association and former member of the hamlet council.

Major areas discussed include the effect of the service base on the community and the lifestyle of local residents. The first year of the base operation the workers (30) lived in the village and Linda and Jim rented trailers to the construction workers. The Cockneys said that the first summer was very bad due to the high volume of drinking that was going on because of the workers. Additionally, it was the first summer that they had seen drugs. They explained that the second summer of operations the workers lived at the base, but had access to Tuk. The Cockneys' report that there was trouble the second summer as well--trouble meaning alcohol, drugs, and the men pursuing native women. Thus , the third year the village became off-limits for service base workers.

Jim has the contract to provide water to the service base which consists of pumping water out of the fresh water lagoon into a truck, hauling it to the base and pumping it into the holding tanks at the base. He has a three year contract which is finished next year and it has been renewed once previously after his first year of successful operation. He anticipates bidding and receiving the new contract at the end of this period.

When asked about how Tuk residents were faring with employment opportunities at the base, Jim indicated that those who want to work can do so, but that there is an element of the community who do not choose to do so or are "unable to do so because of 'lack of initiative ." Jim believes that those who are not participating in the economic opportunities that the industry provides are simply not trying. He also indicated that he could make more money as an employee, but prefers to work on contract because he is his own boss.

In the evening, we conducted a committee-type interview with three Eskimo leaders of (COPE) the Committee for Original Peoples' Entitlement: Sam Raddi, President, peter Green Secretary, and Nelli Corenovea, Land Specialist. COPE, representing Inuvialuit Eskimos, their land, sea, and air, and the animals that subsist in their region, offered a different and more complete view of Eskimo responses to oil developments in the North.

CCPE, a native organization, was formed in the late 1960's, and for several years prior to 1978, when an agreement in principle between COPE and the Royal Canadian Government was reached, the federal government funded COPE to research the land claims for the Inuvialuit of the western Canadian Arctic. COPE membership is composed of the peoples of the Beaufort Sea area from the Mackenzie River Delta on the west midway through Victoria Island on the east and the Parry Islands on the North. The region, which may well be rich in oil deposits, is the precise area from which DOME's BSAC has been drawn. COPE has entered into an agreement in principle with the federal government* which, if ratified, will allow the Inuvialuit to (1) retain surface rights to 32,000 square miles of their aboriginal land (which is 168,000 square miles), (2) retain surface and subsurface rights on another 5,000 square miles of land (3% of the aborginal title), (3) and grant natives an advisory role in the decision making process with regard to economic developments and its environmental and social consequences for the Inuvialuit and the 32,000 square miles for which they will retain surface rights; but not subsurface rights..

The agreement in principle offers few protections and, except for 5000 square miles to be turned into a wilderness park, no controls over the uses to which the environment will be put. For instance, if DOME holds subsurface rights to some of the Inuvialuit 52,000 square miles and chooses to extract oil from those areas, the affected Inuvialuit, who may suffer the loss of caribou, whales, seals, fish, or geese from these actions, would be compensated, but the compensation is not clearly spelled out.*

The indeterminacy and unpredictability of the nature of the final agreement, including the rights that will be confirmed on the Inuvialuit has exercised the COPE leaders. They expressed concern that the federal government was vascillating and wanted to renege on the principle. They also expressed concern that DOME was manipulating hamlet *councils*, such as Tuk's by awarding small sub-contracts for trucking, hauling, and taxi service, and the like, to coun-

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[4] the agreement has no binding force

[5] see Constance D. Hunt, 1978, "Inuvialuit Land Rights: A Commentary" Northern Perspectives 6(4):1-4, published by the Canadian Arctic Resources Committee, Ottawa for a brief assessment of the agreement.

cil members and manipulating its child, the BSAC, by paying, providing per diem, and gifting, (trips, etc.) its members while expelling difficult members.

According to COPE spokespersons, Eskimo people are not elected to the BSAC, they merely volunteer their services. *Some volunteers* belong to hunters and trappers associations, and some belong to the Tuk hamlet council. In the view of the COPE leaders, "DOME knows who will play ball. They picked outstanding, outspoken people". Given COPE's long-term involvement with Inuvialuit affairs vis-a-vis the federal government, the principle of agreement with the government that favors private industry and offers very limited safeguards to the Eskimo environment, particularly Eskimo subsistence resources, it is not surprising that COPE is wary of DOME, BSAC, and the federal government (which funds COPE's activities).

The COPE plan is to establish a regional government for the western Canadian Arctic in which each community will have representation to the regional government. DOME's, BSAC, and the lobbying activities of DOME and Dick Hill in Ottawa pose a threat to that plan in COPE's view.

The COPE people took it as a given that we understood that "outspoken" people who volunteer themselves to lead were not, ipso facto, Eskimo leaders. They pointed out that hunters and trappers associations were deliberative bodies whose decisions were usually consensual. They did not exercise absolute authority. Rather, they exercised persuasion. If, for example, people from distant villages sought to hunt whales in another village's territory, they would request to do so. If the request was for food, it would surely be granted "because you do not deny people food". On the other hand, if foreigners sought to trap fur bearing animals in someone else's territory the request would be denied. Even there it was not clear that the hunters and trappers association would act in concert to stop the poachers.

We asked if there were about 500 natives employed between DOME (380) and ESSO (100). The COPE people laughed, claiming that there were no more than 70 people from the entire Inuvialuit region employed *and* they knew who they *were.* They seemed willing to list the names.

OCS Impacts on Eskimo Culture

COPE people raised several concerns about oil development. Many of them focused on the environment and their traditional subsistence and trapping activities. They desired to know, for instance, if a blow-out occurred at a well and destroyed the animals in the vicinity (caribou, seals, whales, muskrat) whether the government would pay the people back, and how they would do so? They asked rhetorical questions such as "how do you replace a renewable resource with cash or frozen beef?" and "where will they get the resources to pay us back in land?"

The COPE people claimed that geese no longer fly east along the Arctic Coast past Tuk, that Beluga whale migrations have been less and less predictable--not entering the Tuk area two times in the past seven years--and that further environmental-subsistence calamities, perhaps attributable to the DOME operations, might well be in the future.

When asked about the seamanship of youthful Eskimos and their knowledge of the local terrain, the COPE people claimed that young men, ages 18-35, are successful hunters, but not adept at fully coping with the environment. They use skimobiles in the winter and motor boats in the summer to go long distances in a short time. But they go and return in one day, seldom travel with their families, and are restricted in their knowledge of the wider areas that they traverse. COPE pointed out, however, that the motorized equipment allows hunters to acquire as much game as earlier generations did with dogs and native boats. Yet they do not possess the wide range of subsistence skills employed by older generations.

The Inuvialuit economy was a special concern of the COPE people. In 1978, they established the Inuvialuit Development Corporation (IDC) . By 1981 they had created or purchased several small businesses from a native "country roads" business to an air taxi service. IDC holds no DOME subcontracts. The COPE people repeated frequently that natives want to work and that they have sold their labor, pelts , and products for over one century. Moreover, they alleged , Eskimos, even if educated, tend to return home. Yet they do not get hired by DOME, ESSO, or others. Indeed, the COPE people said that their predictions, made more than eight years earlier about Tuk, have been realized: (1) satraps (council leaders and BSAC members) have been bought off cheaply by DOME: (2) few natives have been employed; (3) native time, especially for hunting, trapping, and festivities, has not been considered and no allowances are made for Eskimos to pursue native activities and also work for the oil companies; (4) schisms within communities between people who support the oil operations, are employed by them, or hold subcontracts, and those who do not are commonplace.

Aside from the subsistence, economic and political consequences from oil-related development, we asked whether the pursuit of jobs has influenced Eskimo children. C CPE claimed that children dropped out of school seeking jobs, worked for a few weeks at menial tasks, and quit after a few weeks , often becoming heavy drinkers and drug abusers.

Drug abuse and heavy drinking has become worse since the oil operations began, according to COPE people. They claim that as youths run out of money but seek more drugs and alcohol that violence increases in the villages. Kids beat one another and the elderly for money to purchase drugs and alcohol.

Household organizations have changed so that women often head households (men are absent), but according to COPE, the more serious problem within families occurs when

the wife-mother is employed in a service job of some type at Tuk, while the husband-father is unemployed. They averred that the husband loses self-respect and is deprived of his personal worth, causing problems for the rest of the family. We could not get much further with this line of questioning.

The COPE people disclaimed that anyone sought help from shamans or maintained traditional beliefs about the supernatural relations between Sends-like or Sila-like beings and the animals of land or sea. Whereas Eskimos still told some legends, the COPE people discounted such beliefs. We have no idea what beliefs modern Inuvialuit Eskimos actually had about the creatures of this earth and their obligations to them. A *survey,* coupled with observations, would be required to develop an empirically warranted account of contemporary village cultures, and to determine how the oil operations have influenced those cultures.

The discussion with Doug Irish also led from the role of natives in ESSO's operations, to the consequences for Eskimo culture from industrial developments governmental programs, and government-sponsored developments in the western Canadian Arctic.

Irish, and everyone else in Aklavik according to him, hunt seals, caribou, and whales, and maintain trap lines. Everyone, he claimed, maintains hunting and trapping camps. When asked whether whaling teams hunted whales in umiaks, he replied that there were no whale-hunting teams any longer and that everyone owned a boat (making it possible for everyone to hunt Beluga whales but not Bowhead whales which, apparently, are no longer hunted). When we asked whether fathers and married sons maintained traplines, he replied that each adult male or couple maintains a hunting camp and a trap line. When asked how men got to their lines and hunting sites in the winters, he replied "by Skidoos" (snowmobiles), adding that no one kept dogs anymore. Irish also volunteered that most Aklavik residents were illiterate, but that they were expert mechanics at maintaining, even rebuilding, their snowmobiles.

Some Aklavik residents work for ESSO and some work for D OMI . Apparently most are "temporary" employees and work for cash income, but live from subsistence hunting, trapping, and government transfer payments and services:

We asked Irish if Eskimos inter-marry exclusively. He said that there were many Eskimo-Indian marriages at Aklavik and in Inuvik. He denied that there were either polygynous family households or extended family households in the area, stressing that each family has its own boat, skidoo house, hunting area, and trapline. If correct, there is much more nuclearization of Eskimo households and kinship networks than was true a scant 25 year earlier. Moreover, whaling teams have withered and the nominal organization that they brought to villages for some pursuits has been replaced, it seems, by village hunting and trapping associations. These groups, one per village, deliberate about issues that affect the game they hunt and trap. According to Irish they do not

exercise much authority, yet their decisions about hunting and fishing are respected. In recent years the Aklavik association has granted permission to Athapaskans from Fort McPherson to hunt whales in the Aklavik villages region, and have also granted permission to Eskimos from Kaktovik on the Beaufort Sea to hunt some Beluga whales in the Aklavik area. (Whales penetrated the west channel of the Mackenzie River all the way south to Aklavik).

The accommodations that Irish has made to ESSO employment and to h-is roles as native labor procurement officer, counselor, trouble shooter, and public relations representative while being married to an Athapaskan, participating in the hunters and trappers association, and maintaining several native subsistence and trapping activities in his village of Aklavik is probably on the extreme edge of Eskimo life in the region. Irish suggested that several (unspecified) Eskimos are regular ESSO employees, yet that none have been quite so successful as himself, and that most prefer village life and all it entails. Drinking in the villages is a serious problem, and Eskimos who drink and do not show up for work are fired. We gained the impression that many ESSO employees, temporary and otherwise, use some portion of their earnings for alcohol, but that they also show up sober for work. (A bottle of whisky in Tuk costs $80). The work, it must be emphasized, is squeezed into a three or four summer month period for most ESSO employees. The natives, therefore, are an excellent source of underemployed labor for ESSO. Weekends or weeks off are available for summer whale hunting and fishing (whitefish).

Irish makes his own toggle-head harpoons to harpoon whales, and also his own long-handled blades to cut the flukes . He attaches 5 gallon cans to the toggle lines to slow the whale. Beaching requires the help from other boatmen. The catch is then distributed among those that help, the elderly, kinspeople, and others in a formula that was not determined, but that appears to have been modeled from the aboriginal reciprocity patterns among groups of helpers and kinship networks. The teamwork to land the whale is, however, ad hoc. Yet the practice of sharing subsistence resources within the community persists. From Irish's account it appears that if Aklavik Eskimos are not expert seamen , many have, nevertheless, acquired sufficient skills to operate small, motorized boats in the Mackenzie, its mouth, and along the Beaufort coast.

We asked Jim Cockney in Tuk about the effect of the base on fishing and hunting patterns: he indicated that he personally had not set his trap line this year for the first time in his life because he didn't have time. But on the whole , he saw little effect on the volume of fish and game available if a person chose to pursue subsistence activities. However, he believes that living off the land is very difficult work and personally prefers to be working for cash as opposed to "freezing his ass off hunting a caribou." At the same time, he did take a week off recently to go whal-

ing, which was successful.

He indicated that everything for Eskimos was "all mixed up now." The lifestyle, the language, and the future were all pieces of the past and the present. While he values the old ways, his hopes for his children are that they become doctors and lawyers because "doctors and lawyers make a lot of money."

Ultimately both Linda and Jim thought that the presence of the base in Tuk was a net benefit to the community. They felt that DOME was a good company to work with and looked forward to a good relationship with them in the future.

They do not, however, want a year-round road connecting Tuk to Inuvik *and* do not want any southerners' moving into the village. They thought that few people had moved in permanently.

It was this Eskimo man's opinion that Tuk residents had to change in order to cope with the pace of modern life and to enjoy its amenities. He said that most Eskimos wouldn't. They did not possess good educations, use the educations that they possessed, or show much initiative. To make matters worse, most were not competent in native subsistence ways either.

We asked if the young men were seafarers and hunters. He replied, "if you take them hunting with you and they don't know what to do, you can't call them stupid and say "Hey stupid". His point was that young men have not learned by watching and doing (precept) and that he was not about to, nor was it good for-m to, rebuke them and correct their errors. He told us, the young people could not survive as subsistence hunters.

Yet it was our impression that this man would be no more directive toward his own children than he would be toward a young, incompetent hunter. Suasion may be the extent of his effort to push his children from Tuk. Furthermore, as doctors and lawyers there would be little reason to return.

The Enclave/Community Interaction

We flew to Tuk on a DOME company plane. Our baggage was searched and stored in a security office at the airport. We were driven to the DOME facility by the Tuk Eskimo who held the taxi service contract. I noticed very few native employees, no more than 20, in our tour of the facility. All seemed engaged in service activities of one sort or another. Our tour was perfunctory, guided by a woman who works for Noel Broom and has been at the job for five years. Broom was also in Tuk with a slide show that he was going to show to one or more groups of visitors that day.

We were then driven to Tuk, passing the DEW line base maintained by the United States, the Eskimo entrepreneurs heavy duty equipment (dump trucks, haulers, grade-rs, and loaders), a small inn, restaurant, church, cemetery, Hudson Bay Company store, and trappers fur co-op. Contrary to

Broom's and Hill's claims, two DOME trucks were in town and the drivers of both sought to enter the fur co-op (native) and the Bay Company. They waited 30 mintues till the Bay co. opened at 1 :30 to buy some goods. A tug boat, either from the DOME docks or the DEW line docks, deposited three white men at the landing below the Bay Co. so that they, too, could enter the store. At least one school bus, loaded with elderly tourists, also made its way around Tuk.

We did not have the impression that Tuk was isolated by DOME's edict. The 700 native residents are considerably affected by the proximity of the facility as well as its acitivites. Service employees come from Tuk, subcontractors live in Tuk, and the like. The woman who leads tours for DOME has a house in Tuk.

Perhaps 20% of the houses in Tuk, a village of 700 people, had strips of whale meat, whale blubber, and smoked whitefish hanging from drying racks in very large quantities. The smoke houses of at least one dozen homes were active, probably smoking whitefish. Three whales had been harpooned in the previous couple of days and distributed among village residents.

SUMMARY

We cannot claim to have become experts on the McKenzie Delta OCS situation in just three days. We did however see evidence of social and 'cultural impacts from oil developments that are quite similar in general terms to those observed by many researchers in white and native communities in the U.S. and Canadian West. All of the changes we learned about cannot be solely or even partly attributed to oil development. Still, it is clear that many social and cultural impacts have been induced by the development. The adaptations to these changes have taken many of the forms outlined in the impact list developed for this study. We feel that a certain amount of validation of that list for Arctic situations has been found.