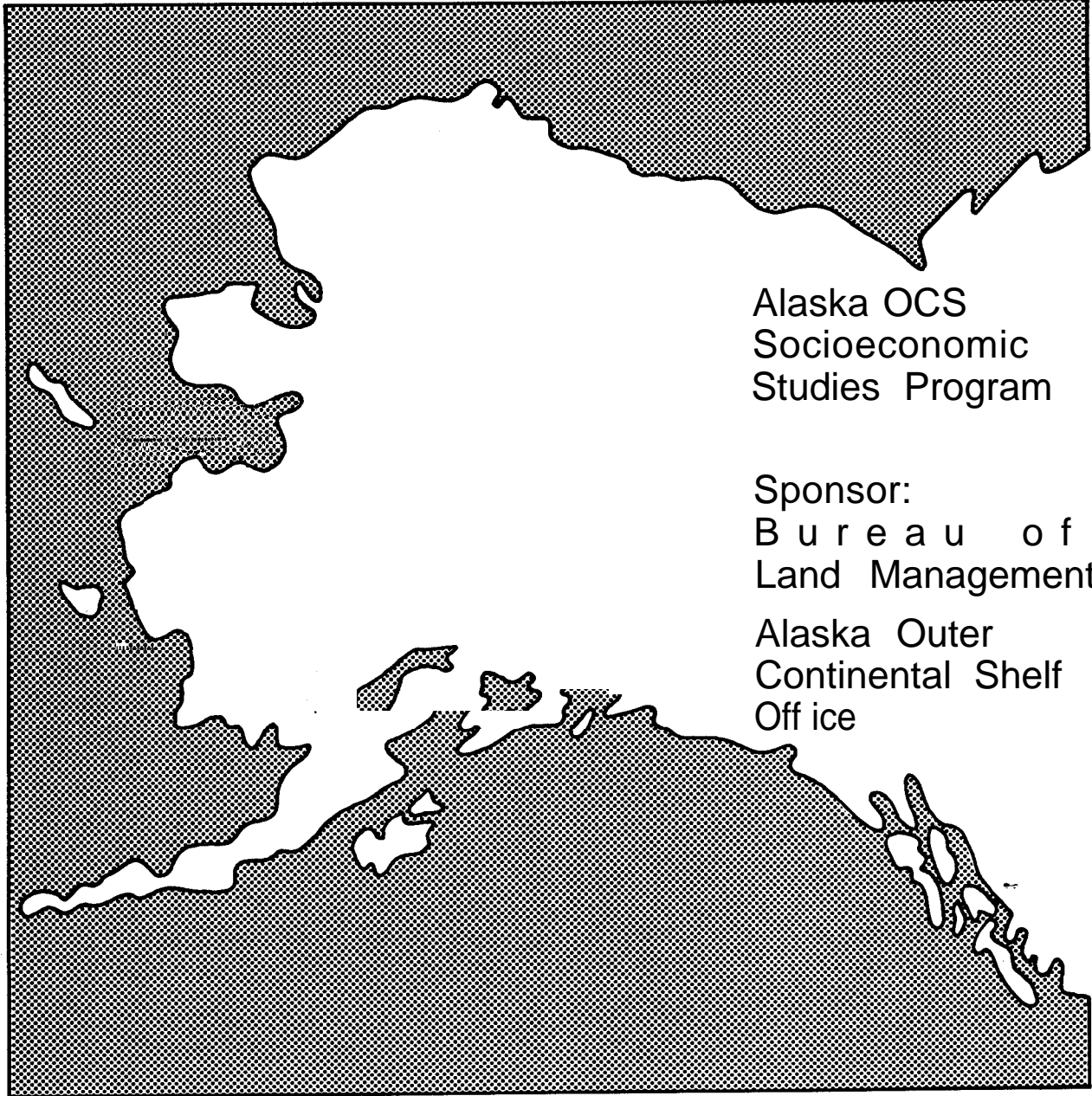


Technical Report  
Number 22



Alaska OCS  
Socioeconomic  
Studies Program

Sponsor:  
Bureau of  
Land Management  
Alaska Outer  
Continental Shelf  
Office

Beaufort Sea  
Petroleum Development Scenarios  
Sociocultural Impacts

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.

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 analysis addresses the differing effects among various geographic units: the State of Alaska as a whole, the several regions within which oil and gas development is likely to take place, and within these regions, the various communities.

The overall research method is multidisciplinary in nature and is based on the preparation of three research components. In the first research component, the internal nature, structure, and essential processes of these various geographic units and interactions among them are documented. In the second research component, alternative sets of assumptions regarding the location, nature, and timing of future OCS petroleum development events and related activities are prepared. In the third research component, future oil and gas development events are translated into quantities and forces acting on the various geographic units. The predicted consequences of these events are evaluated in relation to present goals, values, and expectations.

In general, program products are sequentially arranged in accordance with BLM's proposed OCS lease sale schedule, so that information is timely to decision making. In addition to making reports available through the National Technical Information Service, the BLM is providing an information service 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.

Alaska OCS Socioeconomic Studies Program  
Assessment of Change in the  
North Slope, Beaufort Sea Region  
Sociocultural Systems

Prepared For  
Peat, Marwick, Mitchell & Co,

World Associates  
April, 1978

NOTICE

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ALASKA OCS SOCIOECONOMIC STUDIES PROGRAM  
ASSESSMENT OF CHANGE **IN** THE **NORHT** SLOPE, **BEAUFORT** SEA REGION  
**SOCIOCULTURAL** SYSTEMS

Prepared by  
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## I. INTRODUCTION

The **Beaufort** Sea Region **sociocultural** systems, as described by Worl Associates (1978), are currently undergoing rapid and intense social, **cultural**, and economic change. Current **non-OCS** economic development initiated by both external and internal interests will continue to have direct and secondary effects on the **sociocultural** systems. Social and cultural transformations stimulated by these interests **will** probably continue beyond the year 2000.

A **non-OCS** scenario **will** be marked by continuous pressure on traditional **sociocultural** systems. In this scenario, the North Slope Borough and the regional and village Native corporations will continue to generate institutional growth and economic development. Their activities may enhance, strengthen, or conflict with the present **sociocultural** systems. State governmental **policy** decisions regarding use of the **trans-Alaska** pipeline haul road may further impact **sociocultural** systems. Additionally, the final disposition of the National Petroleum Reserve in Alaska (**NPR-A**) poses serious ramifications for the survival of the **traditional Inupiat** culture.

The analysis contained **within** this **report** attempts to assess the overall effects on traditional values and **sociocultural** systems to determine whether the **Inupiat** can integrate modernizing influences without disrupting their unique **sociocultural** system.

If OCS development does occur, the pressures for change on the sociocultural systems will intensify. OCS activities will intensify onshore environmental impacts and will generate a new dimension of offshore impacts. Potential environmental impacts associated with offshore development, noted by Dames and Moore (1978), may affect wildlife and natural habitats and alter ecological processes. Environmental and ecological changes will directly affect the Inupiat sociocultural system. The survival of the Inupiat culture as a distinct and unique cultural entity depends on the continued viability of its socioeconomic subsistence complex and its direct relationship and dependence on the environment. The ramifications of OCS environmental impacts on the sociocultural systems are comparable to those of a non-OCS scenario,

Revenues accrued to the North Slope Borough and direct employment opportunities resulting from OCS activities, as described by Alaska Consultants (1978), will offer further impacts on the sociocultural system. OCS employment opportunities will also intensify interethnic contact and relationships,

OCS activities have already begun to impinge on the sociocultural system. The call for nominations has stimulated a negative response from the communities of Kaktovik and Nuiqsut, which have adopted resolutions opposing OCS development in the Beaufort Sea. OCS activities can be expected to impact a system that is currently experiencing change. Assessment of OCS Impacts must consider the cumulative effects of the non-OCS scenario together with OCS consequences.

Overview of Assumptions and Procedures  
for Assessing Change

ASSUMPTIONS

The **discovery** of similarities and **differences** among the societies of the world has **long** been the anthropological approach in studying cultural systems. Its orientation has been largely limited to historical **or processive** changes in the overall **social** system of a given society, While there **are several** theoretical approaches or models social scientists employ to explain the **process** of **economic** development and social change, none has been refined and universally adopted, **and none** can reliably predict what specific changes **will** occur, Although social science is not exact and cannot make specific predictions, it can describe relationships between cultural **and** societal **components** that help **explain** individual and group behavior.

**Social** scientific theory relative to **social** change **has generally** been dominated by the acculturation **model** **which** recognizes four **principal** facets:

- The characterization **of** the properties of the two **or more** autonomous **cultural** systems which come into contact,
- The study of the **nature** of the contact **situation**.

- The **analysis** of the conjunctive **relations** established between the cultural **systems upon** contact,
- The study of the cultural **processes** which flow **from** the conjunction **of** the systems,

The common interpretation of acculturation has tended to **view traditional societies** as becoming more **like** modern **societies**, progressing on a unilineal continuum from traditional **to** modern. The **sociocultural** description of the **Beaufort Sea Region** attempts to describe a **society in which the** Indigenous population has adopted **western** institutions and symbols while assigning traditional **meanings to them**. The **Inupiat** appear to be **attempting** to delegate **new or traditional** functions **to** western institutions as they incorporate them into their system of **social** relationships and cultural values. The acculturation model tends to analyze the process of culture contact at the locus of contact without examining the forces that generated the contact. However, **it is** now generally recognized that the **macroenvironment** influences the nature of cultural contact at the **micro-environmental level**. This assumption **is** necessary for analyzing petroleum development both onshore and offshore in the **Beaufort** Sea Region.

The **Inupiat** society, as previously described, will be the baseline from which assessment or changes are determined. Impacting forces and resultant impact -- positive, neutral, or negative -- will be qualitatively **projected** from historical analysis and, when feasible, with comparative **analysis**. The assessment of impacts will attempt to project the anticipated

behavior or results in contrast to the traditional mode of behavior and customs of the **Inupiat**.

A survey of the literature supports the assumption, which will **be** adopted for the non-OCS and **OCS** assessment, that changes which occur with great rapidity and encompass a large segment of the population lead to severe disruption, while changes that occur at a slower pace result in fewer disturbances. The overriding basic assumption that will be employed for the **OCS** and **non-OCS** assessment is that in spite of the many obvious changes during the historical and recent contemporary period, traditional economic, social, **political**, and cultural elements remain characteristically **Inupiat**.

#### PROCEDURES

The following general procedures will be adopted to assess potential impacts on the **sociocultural** system of the Beaufort Sea Region:

- Identify the impacts from the projected impact **studies** on the population and employment increases, changes in the man-made and natural environment, and the regional transportation system.
- Identify the **sociocultural** impact categories.
- Assess the effect **of** the anticipated impact on the **sociocultural** impact category.

- Determine if a **change in a sociocultural impact category** will effect further impacts on other **sociocultural categories**.
- Determine and assess cumulative impacts.

## SOCIOCULTURAL IMPACT CATEGORIES

### Subsistence

The foundation of the **sociocultural system of the Arctic** remains in the habitation and utilization **of the natural environment and its resources**. The **Inupiat** remain dependent on these resources **for a majority of** their food and clothing as **well as** for materials used in arts and crafts **products**. The **Inupiat** have continued to be a component of the ecosystem, and their use of the **environment** must **in all** instances be a primary **consideration** in the **analysis** of projected impacts. Environmental **degradation** and change resulting from petroleum-related activities as perceived by the **Inupiat** have aroused considerable concern and **reaction** by the **regional** and **local** governing and **political** bodies. The recent response to the caribou and bowhead whaling issues demonstrates the importance of the natural habitat and resources to **the** permanent population.

The presence of the socioeconomic subsistence **system distinguishes** the **Inupiat** from a westernized society totally dependent on a **monetary economy**. **Although** intimately interrelated with other defined **sociocultural** impact categories such as **cultural values, analysis of subsistence** as



the means by which the group appropriates and distributes the natural resources throughout the community must be considered as a separate impact category. Employment opportunities must be reviewed as they enhance or inhibit subsistence participation.

### Cultural Values

The intrinsic cultural values of the North Slope indigenous population appear to emanate from their deep emotional attachment **to** their natural and physical environment and their interaction with it. This value system strongly influences the people's feelings and behavior and gives coherence to their actions relative to their life on the land, their knowledge of the environment, a dependency on traditional skills, and continued reliance on the extended family. The cultural elements which have survived **acculturative** pressures remain a reflection of their environment. The underlying rationale for the persistence **of the Inupiat** cultural system is elusive and complex; however, this attachment to the land does appear to dominate their behavior. A qualitative analysis of the impacts on cultural values **will** be made to assess the ramifications on the **sociocultural** system.

### Political

The **Inupiat** political majority and control of **local** and regional governments **have** perpetuated and promoted the **survival** and distinctness of their **sociocultural** system in the face of rapid change. To date, political

institutions **have** successfully reflected **the values** and **sociocultural** expectations **of** the **Inupiat**, particularly protection **of the environment** and subsistence. The current **political leadership** has also remained **part** of the system of social relationships characteristic of the traditional society.

The **North Slope Borough** will **be** the primary **institution to** monitor because of the internal changes **it is** generating and **the** responses **it will** make to future external **pressures**. The **Inupiat** community of the Arctic Slope, established **as** a **tribal** government under the **Indian Reorganization Act** amended in 1936 to include Alaska, also has the potential of exerting political influence which to date has not been realized. The regional Native corporation can also be expected to continue its **lobbying** efforts in the state legislature and in Congress, promoting favorable legislative actions for their interests in economic development. The Native village corporations may also **continue** to develop political powers.

### Interethnic Relationships

As noted in the **sociocultural** description of the Beaufort Sea Region (World Associates 1978), **interethnic** relationships may influence the pattern of **behavior of** both the Indigenous population and the migrants. This **impact** category will attempt to assess the quality and characteristics of these relationships and to **monitor** the influx of new residents, demographic **shifts**, and the **ratio** of the **indigenous:migrant** population in traditional communities. Currently, the indigenous population **is** the

majority in permanent communities; however, the effects of non-Inupiat population increases must be a primary consideration in the sociocultural assessment.

### Social Health

The social well-being of the population is an indicator of the adjustments a population makes to changes. Within this category, the presence of social disturbances as reflected in crime, alcoholism, drug abuse, and other forms of destructive behavior will be evaluated. Associated with social health is an assessment of infrastructures to meet the needs of the population.

### Family Relationships

Previously, social scientists have attributed survival of the Inupiat sociocultural system to maintenance of the familial structure. Family organization is strengthened by patterns of sharing and cooperative hunting and fishing efforts. The family is closely inter-related with the socioeconomic subsistence complex. Current changes in the political and economic sphere will determine the viability of the extended family and its ability to cope with further changes. The survival of the Inupiat extended family organization may also be affected by increasing employment opportunities and financial obligations.

Summary Description of the  
Beaufort Sea Region Socio-cultural System

The Beaufort Sea Region is the aboriginal territory of the Inupiat (northern Eskimos), which they and their ancestors have used and occupied for past thousands of years. Their territorial range includes the area north of the Brooks Range and extends miles beyond the terrestrial zone to the frozen surface of the Beaufort and Chukchi sea ice, a rich source of marine mammals, fish, and migratory fowl. Although jurisdiction over the land has been assumed by federal and state governing agencies and most recently by the Native corporations established under the Alaska Native Land Claims Act, the Inupiat continue to enjoy unrestrained access to their land and sea ice environments.

After a 150 years of contact with Western influences, the Inupiat presently exist as a distinct cultural enclave within the larger society of Alaska and the United States. Outwardly, the manifestations of Westernization are most apparent by the abundance of modern goods and services, institutions, and houses and a monetary economy. However, while the aboriginal culture has incorporated and integrated numerous elements of Western culture, it persists as a characteristically Inupiat society.

The cultural flow between the Inupiat and Western institutions has been two way. Because of the absence of a stable market economy and an environment which has historically not been economically productive and the remoteness and isolation of the North Slope region, non-Inupiat did not

populate the area to any **significant** degree. The **periods** of **economic** development that **did occur** attracted most of the **immigrant non-Inupiat**. When development activity declined, the temporary migrants left the North Slope. Cultural contact occurred primarily between the **Inupiat** and a **limited number** of **non-Inupiat** and their Western institutions. The **introduction** of Western institutions was gradual, **which** allowed the **Inupiat** (who **always** maintained the **numerical** majority within their aboriginal setting) to adapt **and** accommodate the changes without dramatic consequences.

The tenacity of **Inupiat** cultural survival has been attributed to their continued relationship to the land and their environment and the continuation of their **traditional social** organization in the **family** and **community**. The **Inupiat** participate to varying degrees in a monetary economy, but they largely remain directly dependent and emotionally attached **to their** environment and its natural resources,

While many technological innovations have been adopted, others have been rejected or modified, and traditional hunting patterns continue to govern subsistence activities. The cultural values of cooperation and sharing persist into the present day and strengthen the **family** and community organization. Additionally, **Inupiat** remains the first language of the majority of the Population. Their strong sense of **Inupiat** identity and solidarity has been strengthened by the emergence of regional political and economic **organizations** (the **North Slope Borough** and the **Arctic Slope Regional Corporation**), **which** allowed participation in and **direction of** recent changes generated by petroleum development at Prudhoe Bay and recent exploration of **NPR-A**,

Although **positive changes** have occurred at **institutional levels**, **individual** adjustments to rapid change **have** not been without **social** and **psychological** costs. The spectrum of **direct** and **indirect social** ramifications stimulated by **petroleum development** and **exploration activities**, an increasing **non-Inupiat** population in traditional communities (**particularly at Barrow**), and the **severe** **limitations** placed on **major** subsistence **activities** by external regulatory actions and a **diminishing land and resource** base have cumulatively **served** to promote cultural **disruption**. The effects are manifested in **increasing** levels of generalized **hostilities**, violent behavior, and disharmony **among** members of the **Inupiat** group and between **Inupiat** and **non-Inupiat**. The **increasing** problems associated with **alcohol** and drug abuse **also** indicate social and cultural tensions **linked** to development and dissatisfaction with **restrictions on** the subsistence life-style,

## II. NON-OCS SCENARIO

### Introduction

In a non-OCS scenario, Beaufort Sea Region **sociocultural** systems will be influenced by economic and demographic Impacts outlined by the Institute for Social and Economic Research (ISER 1978), man-made **environment** impacts delineated by Alaska Consultants (1978), transportation impacts described by Dooley and Associates (1978), and natural-physical environment impacts detailed by Dames and Moore (1978). The forces of potential change which may impinge on **sociocultural** systems were abstracted from the above-referenced reports and are **identified** in the following Summary of Impacts. The identified impacts will then be assessed as they may affect the **sociocultural** impact categories which were delineated in the previous chapter.

### Summary of Impacts

#### POPULATION

For purposes of assessing Impacts on the **sociocultural** system in a non-OCS scenario, population changes should be broken down into three **categories**:

. Population increase of Inupiat

- Population increase **of non-Inupiat** in traditional communities
- Population fluctuations associated with the **Prudhoe Bay-Deadhorse** complex, **NPR-A activities**, and the planned **Alcan** gas pipeline

Demographic **shifts** between **North Slope** communities, migration **to Barrow** from the villages, **or migration** from **Barrow** or other **villages** to the reestablished communities as **described** by Alaska Consultants (1978), must also be considered. Dramatic demographic **shifts could severely impact** hunting and **ishing** resources,

The changing population ratio between **Inupiat** and **non-Inupiat** in the **traditional communities**, as referenced by the Alaska Consultants report (1978), should **also** be assessed as to how it may **affect** the **sociocultural base**.

#### EMPLOYMENT

The **non-OCS** scenario employment forecast should **distinguish** between employment increases in which the **Inupiat** participate and **increases** in **employment** in oil and gas related sections filled by the **migrant** worker housed in enclaves. The North Slope Borough and the Arctic **Slope** Regional Corporation **will** continue to **offer** employment to the borough residents as well as **attracting** non residents. The major employment **increase** in the **non-OCS** scenario **will** be **associated** with **NPR-A** activities and the planned **Alcan** gas pipeline. The degree to **which** the **Inupiat** participate in



petroleum-related activities **may result** in both negative and positive effects which should also be considered.

As noted by Alaska Consultants (1978), an Immigration, primarily to Barrow from outside areas, can be anticipated **to fill** some of the new jobs in Barrow. The immigration rate of **non-Inupiat** who obtain employment and remain in the North Slope could potentially affect the **socio-cultural** system.

The location and work schedules of jobs will **also** affect the **sociocultural** systems. A flexible work schedule seems to **be most** compatible with subsistence demands.

#### ECONOMY

Exogenous industries dominate the North Slope economy, however, their primary **impact** on the traditional **sociocultural** system is generally indirect **since** only a few permanent residents are involved, **Their** primary effect on the **sociocultural** system **is** derived from the tax **revenues** accrued **to** the North Slope Borough. Petroleum industry activity is expected to fluctuate during the non-OCS scenario. A boom-bust economy often associated with petroleum industries **is** possible after the year 2000 if **OCS** development does not occur,

## MAN-MADE ENVIRONMENT

### Education

Educational facilities have far-reaching effects **on** the man-made environment of the North Slope. Alaska Consultants (1978) noted that these facilities are **being** designed to meet much more than classroom needs. They will serve a variety of functions and **fill** many community **needs**. For example, school swimming pools provide recreational opportunities for the entire population and also serve as water reserves for fighting fires.

The potential impacts of creating new and expanded recreational opportunities and providing adult educational programs are areas for careful **scrunity**. The philosophy of the North Slope Borough school board and administration as to use of these facilities **will** be the key to their long-term impacts. Employment in constructing and maintaining the facilities must also be considered. Newer, larger, and more complete educational facilities may positively affect the general attitude, adaptability, recruitment, and retention of teachers (generally **non-Inupiat**) for North Slope Borough schools.

Projected growth of school enrollments **will** not appreciably affect demand for facilities since, except **for** Barrow, these rates are based on natural rates **of** increase. **In** Barrow the **impact** of a slightly **higher** rate of increase must be projected against growth already anticipated.

If the Inupiat language and culture curriculum is expanded and the number of certified and paraprofessional Inupiat staff is increased, sociocultural impact of a positive nature can be anticipated.

### Public Safety

Expanded public safety facilities and manpower levels are presently required in all North Slope communities. The existence of holding facilities affects the ability of communities to control their criminal justice system, and only a few communities have facilities for short-term local incarceration. Creating conducive working conditions for local public safety officers facilitates their relationship with the community. Public safety officers, who are generally non-Inupiat, also influence inter-ethnic relationships in the communities,

### Fire Protection

Fire protection is a local community power. The presence of a facility in which fire-fighting equipment can be stored, training can be given, and which serves as a coordinating center during fire emergencies will have an effect on smaller communities. Barrow is currently the best equipped and thus would be least impacted by increased facilities. Alaska Consultants (1978) indicated a need for pump-equipped vehicles and reliable water sources in each community. Multiple use of trucks for water delivery and for fire fighting could help provide a focal point for community cohesiveness in fire emergencies. A key impact potential

is organizing and training volunteer **groups for** fire prevention and fire fighting.

### Recreation

Expanded indoor recreation is primarily related to **plans** for new schools or for use of existing school facilities in the smaller communities. Outdoor recreational areas, such as parks, playgrounds, and **ball** diamonds or courts, can be used for only about four months a year. **Plans** for building a recreational **facility** may impact **activity** patterns of children through young adult. The principal effects **of** expanded recreation **facili-**ties are increased activities during the winter months **and** diversified activities throughout the entire year which **will** involve a **larger** segment of the population.

### Gas/Electric

Alaska Consultants (1978) indicated that the present gas carrying capacity of the **line** in Barrow **will** be adequate to the year 2000. Two problems, however, are worthy of note, The South Barrow Gas **Field** requires continued maintenance and new developments to insure a steady source of gas. Reports as to the long-range potential of this field vary but are somewhat skeptical. Secondly, distribution lines in Barrow are inadequate and hazardous.

Energy demands **in** all communities are increasing due to expanding public

facilities and housing construction, rising income levels, **and** increasing use of electrically powered amenities such as radios, lights, televisions, and appliances. Every community needs more generating capacity. Purchase and maintenance of **generating** equipment are expensive and further increase the need for fuel, which is also extremely costly in the Arctic. Increased gas and electric consumption is indicative of changing or modernizing living patterns.

### Telephone

Alaska Consultants (1978) Indicated that the Arctic Slope Regional Corporation has an application to provide phone services in each traditional community. Improved communications may be important in developing ties between communities and communities and government agencies which serve them. Drawbacks would be **solely** monetary. **Alaska** Consultants further pointed out that demand is not based on population growth but on financial ability and desirability of phone service where it was not previously available, Improved medical, police, family, and natural emergency services would be possible **with** better telephone communications.

### Housing

Adequate housing is critical to the current as well as future **quality** of life in every community on the North Slope. Increased personal and **family** income, the concentrated efforts of the North Slope Borough to construct houses, and the availability of federal rent subsidy programs may all

contribute to meeting housing needs.

The houses and apartments constructed by the North Slope Borough were designed by southern firms which recognized the climatic and technical constraints but ignored the cultural and functional needs of the occupants. The spatial arrangements in the design of the houses did not correspond to the activity patterns characteristic of hunting and fishing families.

Increased availability of new and larger housing will impact the following areas:

- Extended family relationships
- Pressures on traditional activities such as storage and preparation of subsistence foods
- Demands for cash income
- Continued work opportunities through construction and maintenance
- Population increases through an immigration of non-Inupiat

#### Local Government Finance

Alaska Consultants (1978) noted that the North Slope Borough's reduced ability to collect property tax in the case of a non-OCS scenario is not

anticipated to cause **problems** before the end **of** this century. Alaska Consultants succinctly pointed **to the** major concerns of the **North Slope** Borough, which are the short-term problems associated with revenues for capital improvement, while the long-term concerns **relate** to revenues required to provide services and to maintain **and** operate borough **facilities**. The major impacts of local government finance which may affect the **socio-**cultural systems are as follows:

- e Increased and stable local control **of** the **local** government
- **Stable** economy based on construction and maintenance
- Increased standard of living based on economy, services, and facilities
- Increased marketable **skill** levels of the **Inupiat** population through training and participation in capital improvement projects
- Opportunities for **Inupiat** with higher educational levels

#### NATURAL PHYSICAL ENVIRONMENT

##### Water and Waste

Water and waste disposal systems for all traditional communities of the **North Slope** were described by Dames and Moore (1978) as inadequate and

not up to regulatory agency standards. The majority of residents continue to haul water in summer and ice the remainder of the year from the lakes and streams much as they did in the historical and aboriginal past, although snow machines are currently used instead of dog teams.

The water truck was introduced in 1975 to Barrow and Wainwright residents. Water can be delivered to those who can afford to pay the 4¢ to 7¢ per gallon for untreated water from the lakes or 14¢ to 17¢ per gallon for treated water from the plant. (Treated water has been chlorinated and passed through the reverse osmosis distillation system.) Water delivery has a monetary cost but requires less energy and time than hauling water or ice. The comparative costs between purchasing water or hauling water has not been calculated. The sociocultural effect of the water delivery system has been increased leisure or available time for those who previously hauled their own water. The water delivery system also affects employment and recreational needs.

Other perceived effects of the water delivery system are related to chlorination. A water and sewage plant and a shower and laundry facility in Wainwright discharges its wastes into a lagoon. Residents of Wainwright have expressed concern that the chlorine and discharge from the facility may damage the smelt population present in a nearby lagoon. Smelt is an important food and trade item. Residents have also complained that chlorine is also distasteful.

Water delivery may not affect per capita use rates as much as might be expected. Wainwright, which has a delivery system, continues to utilize



the same amount of **water** as **Kaktovik** and **Nuiqsut**. **However**, Barrow **con-**  
**sumes** more water per capita per day, perhaps in part because of the  
higher **non-Inupiat** population.

Water is discharged directly onto the ground outside each dwelling **unit**.  
It tends to accumulate since **it** cannot be absorbed into the ground  
because of the permafrost. With an increasing population, the higher  
water consumption level of Barrow resident, the greater density **in** the  
residential area with the construction of multi family dwellings, the  
accumulation of discharged water may pose health problems, During spring  
thaw, the grounds around the houses would tend to be flooded,

**While** most houses in the traditional communities are without a centra-  
lized water and **sewer** system, government installations and teachers  
quarters in Barrow have modern facilities, The contrast between the  
quarters occupied by **non-Inupiat** and those of the **Inupiat** is a potential  
source of conflict. Although this is **not** a new impact, the contrast  
may **be** a continuing source **of** tension until the Borough completes **con-**  
**struction** of new houses and a water system is developed.

### Mineral s

Dames and Moore (1978) noted **that** sand and gravel requirements may be a  
source of potential conflict **between** North Slope communities and petro-  
leum industry, Competitive demands **for** sand and **gravel** may develop bet-  
ween the petroleum industry and the North Slope Borough and the regional

and village Native corporations, which also require these resources for their construction and development projects, Dames and Moore also noted that onshore and offshore gravel extraction may result in environmental impacts which would affect subsistence food resources, Wildlife populations were adversely affected, the sociocultural systems would be impacted if access to subsistence resources were curtailed by either a depleted stock or stringent government regulatory controls, Serious food shortages may alter sharing patterns which serve to strengthen Inupiat social cohesiveness.

### Fish and Wildlife Resources

Fish and wildlife displacement enumerated by Dames and Moore (1978) resulted from petroleum development activities associated with construction of the trans-Alaska pipeline. Construction of the natural gas pipeline could pose further environmental impacts and wildlife displacement which would affect the subsistence resource base, Increased sport and recreational hunting by nonresidents of the North Slope together with the sport fishing by personnel stationed at Prudhoe Bay will place competitive hunting and fishing pressures on the Inupiat subsistence base, Dames and Moore (1978) claimed that the most serious fish and wildlife impacts will result from habitat disturbance due to gravel mining, collection of potable water, and location of facilities. Harassment or disturbance of wildlife by boats, aircraft, vehicles, or other human activities due to improved access may affect wildlife migratory patterns which would have a direct bearing on the sociocultural systems of the North Slope if fish and game were not available to the hunter,

## REGIONAL TRANSPORTATION SYSTEMS

The major regional transportation system impacts on the **sociocultural** system in a **non-OCS** scenario **will** stem from **potential** impacts on the wildlife. Construction of the **Alcan** gas pipeline and **NPR-A** activities **will** be two primary generators of increased air, land, and marine traffic on the North Slope. The rate and route of traffic and the time period of travel will be the variables potentially affecting wildlife behavior. Adverse impacts to the wildlife population would affect Inupiat **subsistence** patterns.

Although high-flying aircraft are not known to affect the wildlife which the **Inupiat** utilize, the increasing number and noise associated with landing aircraft may disperse the wildlife, particularly caribou, further away from **communities**. Construction of temporary and permanent airfields at **NPR-A** drilling sites and the air traffic associated with exploratory activities may also impact caribou migratory behavior. Hunters have complained that the lower-flying smaller aircraft have affected the behavior **of** the **caribou**. Changes in migratory patterns or movement away from the hunter will tend to frustrate hunting efforts.

The haul road, which will be used by **Alyeska** and proposed gas pipeline construction, will discourage wildlife use of the surrounding areas. Dames and Moore (1978) noted that wildlife displacement had already **occurred** within the **Prudhoe Bay oil field**, and uninterrupted activities in the area will insure continued displacement,

Marine traffic along the **Beaufort** Sea coast is possible only when sea ice is absent. Increasing marine traffic to supply NPR-A exploration demands as referenced by **Dooley** and Associates (1978) may potentially affect the marine resources hunted by the **Inupiat**. The presence of ships and barges and the associated noise may serve to disperse marine mammals away from the range of **Inupiat** hunters.

The competition for transportation and freight services during anticipated gas pipeline construction may be a potential source of conflict. During **trans-Alaska** pipeline construction, rural residents complained that commercial airlines gave higher priority to pipeline activities while their services deteriorated. "

#### Assessment of Impacts on the **Sociocultural** Systems

##### SUBSISTENCE

The **Inupiat** occupation of the Arctic has been based on the harvest of renewable resources. The means by which subsistence resources are appropriated and distributed influences the social organization of the **communities**. Changes in the socioeconomic unit will affect subsistence activities. The subsistence economy is now in part interrelated and supported by a cash economy. Subsistence analysis must consider how cash is incorporated and distributed through the socioeconomic unit to support subsistence activities. Changes in the cash economy in which the **Inupiat** participate can be expected to affect subsistence.

Increased employment opportunities may pose both negative and positive impacts on subsistence complexes. Recent historic experiences have indicated that an increase in personal income has not necessarily resulted in a decrease in subsistence activities, and in some instances it has improved the efficiency of subsistence activities.

Time constraints of employment demands may also affect subsistence requirements. The North Slope Borough and the Native corporations have allowed the hunter to take time off for subsistence activities. Subsistence would be adversely affected if employers ignored hunting and seasonal subsistence needs.

A subsistence decrease would affect the individual hunter and the entire **community**. As noted by Worl Associates (1978), subsistence involves a series of complex sharing patterns and communal activities which serve to bind the socioeconomic unit, the community, and eventually the entire **Beaufort** Sea region. The diet and nutritional development of the population would also be adversely affected by decreased subsistence consumption. Subsistence products are high in protein and nutritional value. Senior citizens who receive a substantial portion of their diet needs through sharing patterns and who have a limited income would be seriously affected. Reduced subsistence would also negatively impact the active subsistence harvester who would participate to a lessening degree in rigorous physical exercise demanded by subsistence pursuits. A long-term negative impact would result from decreased socializing and training of young future hunters by the older experienced hunter.

Demographic shifts associated **with** potential increased employment opportunities can **have** a disruptive effect on the socioeconomic unit **or** extended family. If younger family members leave a traditional community, senior members of the family may be left without a continuing stable source to subsistence products. Whaling crews could be affected **if** a large number of hunters **leave**. **If** a significant number of hunters migrate to Barrow, intense hunting pressure **on** the Barrow subsistence resource base would result. The natural rate of **Inupiat** population **in-**crease is not **antic**ipated to affect the socioeconomic units.

The purchase of modern technological equipment has been possible with higher income levels, **In** many instances, modern equipment has reduced the need **for** communal hunting activities. However', **in** other cases it has strengthened cooperative hunting **efforts**. Inland hunting with snow machines has promoted the establishment of hunting partnerships since snow machines are not as reliable as the dog teams they replaced. Since hunters can travel hundreds of miles **on** the snow machine away from the village, a break-down could be **disastrous** if a hunter **were alone**.

**Whaling**, which remains a cooperative **hunting** venture, **requires** a **signi-****ficant** amount of cash to purchase equipment and supplies and feed the **crew**. Although the whaling enterprise **is** supported by the captain and possibly by a **few other** members of the family, the whale **is** distributed throughout the entire **community**. The increasing number of whaling crews is **associated** with employment opportunities, While a greater number of **crews** has improved the efficiency of whaling **by** decreasing the number of

whales lost, the increase could be disruptive **if** there **are more crews** than available members to adequately operate each **whaling** boat,

The North Slope Borough recently completed the construction **of** 131 **housing** units throughout all the communities which will be **sold or** rented to residents. Other independent **firms** and individuals have also constructed new houses. The costs, including house payments, rent, **utilities**, and fuel, will require access to a cash income which may necessitate permanent employment. As previously noted, the impact would be negative to the degree subsistence activities were discouraged and decreased.

The new housing units and multi family **dwellings** are not ideally designed to accommodate the **sociocultural** spatial requirements of the **Inupiat**. The new units lack adequate space for butchering, processing, and storing subsistence products and snow machines. The size of the ice cellars used by the **Inupiat** are large enough to permit the preservation of enormous quantities of subsistence products. The **lack** of ice cellars and relocations to new areas without ice cellars could be a negative impact **if it** serves to inhibit subsistence activities. However, the need to butcher game in a suitable space and to store game in ice cellars **will** tend to reaffirm ties to family members who still occupy traditionally designed homes.

Each North Slope Borough community school has adopted school calendars that are as compatible as **possible** with subsistence cycles. Positive impact on subsistence as **well** as the educational curriculum and student

participation should result **with** the educational system's considering **sociocultural** needs of its population.

The impacts of the National Petroleum Reserves **Production** Act of 1976 on the **sociocultural** systems **will largely** be determined by subsistence policies and land use designations that are developed for **NPR-A** and by oil, gas and mineral exploration and development that may conflict with or deter subsistence **activities**. In 1979, Congress **will** establish the final disposition of the 23 million-acre reserve. The inland areas, including **NPR-A**, are used extensively for hunting and fishing by residents who **live** within and adjacent to it. Restricted access and adverse **environmental** impacts to the wildlife populations would effect negative impacts **if** subsistence activities were curtailed.

**Inupiat** subsistence may **also** be increasingly affected by other **legisla-** tive actions and government regulations **in** addition to the National Petroleum Reserves Production Act. **Worl** Associates (1978) cited pending D(2) legislation under **the Alaska Native Claims Settlement Act** as a potential **impacting** force. D(2) **legislation** will prescribe subsistence activities that **will** be permitted **in** the **Arctic** National Wildlife Range, **In** 1976 the first regulations imposed by the Alaska Board of Fish and Game on caribou hunting, referenced by **Worl** Associates (1978), reduced the harvest from the Western Arctic herd from 25,000 to 3,000 **caribou**. The International Whaling Commission (**IWC**) imposed the first quota on **Inupiat bowhead** whale hunting in 1978. Government enforcement of the international treaty between **the** United States and Great **Britain** which prohibits



the harvest of migratory water fowl when the **bird** resources **are** present in the **Arctic** is **also** a **potential** threat to subsistence.

The cumulative effects of subsistence legislation and regulations pose far-reaching ramifications throughout the **sociocultural** systems. The cumulative effect of all subsistence regulations may seriously hinder the viability of the subsistence complex which, as described by **World Associates** (1978), serves to integrate the North Slope community as a social and cultural unit.

The **recent** caribou and **whaling** regulations stimulated political action and organization among North Slope **Inupiat** together with **Inupiat** from Canada, Greenland, northwest Alaska, and Siberia and **Yupik** Eskimos from **Gambell** and **Savoonga**. The Alaska Eskimo Whaling Commission (**AEWC**) was established in response to a proposed ban by **IWC** on subsistence **bowhead** whaling. Impacts **will** be positive if legislation and regulations serve to stimulate a growth in the wildlife populations that would be available to the subsistence hunter.

The environment has tended **to** be assessed solely in terms of **its** natural and physical characteristics. However, a **sociocultural** analysis of the **Beaufort** Sea Region must consider the environment and wildlife population impacts as they may affect subsistence. As noted throughout the **Beaufort** Sea **Region Sociocultural** Systems study by **World Associates** (1978), the **Inupiat** remain dependent on natural resources for a major portion of their food and clothing. Evaluations of anticipated impacts on the

environment must view the **Inupiat** as **an** integral component of the ecological system. Alterations in the environment and wildlife population **will** affect interrelationships between the **Inupiat** and **their** environment and their **sociocultural system**.

### Cari bou

The caribou population which is a primary food resource for the **Inupiat** is expected to be affected by petroleum-related activities, as outlined by Dames and Moore (1978). Without adequate consideration, drilling and construction sites, camps, and an increasing number of airstrips necessary for **NPR-A** exploration and development **will result in** taking habitats out of wildlife production. Calving grounds may shift because of **concentrated** activities, and pipelines may **alter migration** patterns. Low-flying aircraft may disperse herds.

The **increased** population associated with expanding employment **opportunities** both within the traditional communities and enclave exploration and development sites may stimulate **increased** sport hunting activities. Although oil companies prohibit employees in enclave sites from having firearms or engaging **in** hunting activities? no regulations exist which prohibit the **employee** from **returning** independently to the North Slope to "hunt. The **avid sport hunter** would be more inclined to return to an area with which he was familiar, Dames and Moore (1978) cited an increase in sport hunting of caribou **in** the Brooks Range within recent years, **Competition for** the limited caribou hunting permits allowed by the Alaska

Board of Fish and Game may result in a tense interethnic situation if a sizeable number of non-Inupiat obtain hunting permits,

When state regulations and subsequent legal action resulted in a total prohibition of caribou hunting, the federal government provided financial aid to the North Slope Borough to purchase meat for the communities affected by the caribou ban. The commercial meat was distributed equally throughout all the communities based on Inupiat norms and values. Although actual amount of available meat was only a fraction of the usual caribou requirements, the commercial meat was not distributed based on the Western welfare system. The Inupiat apparently did not elect to correlate the caribou sharing patterns with a welfare program based solely on need.

#### Bowhead Whale

The bowhead whale is essential to the coastal Inupiat subsistence economy and, as noted by Worl Associates (1978), is the basis of the coastal sociocultural system. Adverse impacts to the whale population and continued restrictive quotas will weaken the subsistence complex,

Although the current size of the bowhead population is not certain, actions at the IWC June 1978 meeting indicate that a quota on subsistence hunting will remain in effect. The 1978 state legislature appropriated funds to the AEWC for bowhead whale research to determine the population level. The National Marine Fisheries Service has expanded its research

activities, The **restrictions on Inupiat** hunting **should** promote a **positive benefit** to the **whale population** since the carrying capacity is assumed **to** be significantly greater than the present level of the **population**.

**Increased** economic opportunities have not decreased participation in whaling activities. **In** spite of the extremely **high** costs associated with the whaling ventures, individual captains, crew members, and financial contributors invest considerable sums of money and time in whaling activities.

The increased non-Inupiat population **in** the Beaufort Sea Region, noted by Alaska Consultants (1978), is not anticipated to impact the whale **population** since they are prohibited by **the Marine Mammal** Protection Act of 1972 to engage in whale hunting, Increased **marine** traffic, referenced by **Dooley** and Associates (1978), may affect migratory routes of the bowhead.

### Marine Mammals

Hunting **pressures** on other **marine** mammal populations, including the **beluga** whale, walrus, bearded seal and **other** smaller seals, can **be** expected to intensify, **With** the restrictive limitations placed on bowhead and caribou hunting, subsistence hunters can be expected to increase hunting efforts for other game,

Population migration to the North **Slope** resulting from onshore development

is **not** anticipated to **impact** the **marine** mammal population, Federal law **prohibits** non-Alaska Natives from hunting sea **mammals** except for the walrus, which is under state jurisdiction. Walrus are desired by the **non-Inupiat solely** for the tusks since the meat is not **generally** palatable to the non-Native who has had no previous experience with the meat.

### Waterfowl

Although the waterfowl population appears viable, international agreements, outlined by World Associates (1978), restrict **Inupiat** hunting of migratory fowl. They continue to hunt waterfowl since it provides a substantial food source. Increased hunting is likely to occur because of the limitation on bowhead whale and caribou hunting.

Impacts to waterfowl population are not anticipated from **non-Inupiat** migrants since they are prohibited from hunting during the season that the fowl are present in the North Slope. Dames and Moore (1978) cited possible impacts on waterfowl from sand and gravel extraction.

### Fish Resources

Inland fishing is an important subsistence activity. The **Inupiat** have asserted repeatedly that the fish population has been adversely affected by **NPR-A** exploration activities. However, it appears not **to** be recognized or substantiated by scientific inquiry. The perceived impact by the Inupiat, whether real or imagined, can stimulate anti-development attitudes and emotional stress,

## Fur-bearing Animals

Small fur-bearing animals, including wolves, wolverine, **fox**, and beaver, are hunted for furs which are used for parka **ruffs** and parkas. **Fur-bearing wildlife** may be **disturbed** by human activity and tundra vehicles used at NPR-A exploration sites.

## CULTURAL VALUES

**Inupiat** cultural **values** are grounded in the subsistence life-style and deep emotional attachment to the natural environment. Their art and **dance** forms reflect the relationship to the land. Cultural values of sharing and cooperative **behavior** govern subsistence. Young hunters must share their first catch with the elderly. The **first** whale caught every season is shared among all crews. Status depends on being a successful and **good** hunter.

Adverse environmental and wildlife impacts and the cumulative effect of restrictive hunting **regulations which** serve to **decrease** subsistence **participation** may weaken cultural values of sharing and cooperative behavior. Although **cultural values** are elusive and difficult to define, they arouse **high emotion** when they appear to be threatened.

In recognition of **Inupiat** cultural values related to traditional land use **areas, language,** and subsistence, the North Slope Borough established the History and Culture Commission, **Inupiat** Language Commission, and Fish

an: Wildlife Committee. Cultural values will continue **to be** enhanced and promoted if the **Inupiat** maintain their political **majority** and control over **local** government. The North Slope Borough **School** District appears to **be** attempting to incorporate the **cultural values** of the **Inupiat** into their educational curriculum and school calendar. This could be enhanced with more **Inupiat** teachers and administrators.

The **Inupiat** have repeatedly rejected sport hunting as a concept foreign to their cultural values. The classification **of** lands within the North Slope **as** recreational **lands** is based on **non-Inupiat** values, according to the **Inupiat**.

#### POLITICAL

Projected impacts from population increases are not expected to alter the **Inupiat** majority and control of the **local** governments. Although **no** legal restrictions exist, the population associated with **NPR-A** and the proposed gas pipeline are not expected to participate in local **political** affairs. **Non-Inupiat** population growth in the traditional community is not **antici-**pated to **alter Inupiat** political control. The natural rate of **Inupiat** population increase will likely strengthen political organization and assure their continued majority.

The North Slope Borough administration has adopted a policy to maximize **Inupiat** employment both within their administrative offices and in the construction projects **which** are nonunion. By promoting local hire, the

Borough's actions have discouraged an immigration of nonresidents into traditional communities. Local hire policies have served to strengthen and ensure Inupiat political majority and control,

A significant impact of the North Slope Borough has been its political ability to respond to external and potential impacting forces, such as those posed by NPR-A land use classifications, the opening of the haul road, and the previously described subsistence issues. Borough residents have also been able to share in the economic development of the Arctic through borough taxation powers. Although the Borough benefits from economic development, its priority has been the protection of Inupiat subsistence life-style and culture.

Although the regional and village Native corporations are business organizations, they are anticipated to be politically involved in activities which serve their profit-making interests. However, the corporations are prohibited by the Alaska Native Claims Settlement Act of 1971 from expending any of their claims fund received from the Alaska Native Fund on political campaigns on behalf of any candidate for public office. World Associates (1978) noted that the Native corporations have promoted political action to support the subsistence life-styles of their shareholders.

The most significant potential political force can originate from the Inupiat Community of the Arctic Slope ( ICAS). Untested to date is the political power and authority of the tribal government which has a direct trust relationship with the federal government under the Indian Reorgani-



zation Act of 1934 and 1936, Traditionally? **tribal governments** have the power to acquire, manage, **and control** their **own** land **and money which are** independent from state and **local** regulatory intrusions, such as taxation. **Should** the **full** scope of **tribal** self-governmental authority be defined and exercised, it **could** significantly impact the existing **political** status.

#### INTERETHNIC RELATIONS

The **Beaufort** Sea Region **Sociocultural** Systems report (**Worl** Associates, 1978) distinguished between resident **non-Inupiat** and transients. Resident **non-Inupiat** are **individuals** who have made long-term commitments to the area and have, in most all instances, become integrated into the **community**. On the other hand, transients are recent **arrivals** who migrated to the Arctic for short-term employment and have not been integrated into the community.

It is **recognized** that some transient workers may make social commitments to the area beyond economic considerations **and through** time may also become assimilated into the **community**. Transients who have become assimilated **non-Inupiat** residents may be viewed as passing beyond the conscious rubric **of** being classed as "outsiders". Attitudes towards such individuals will, **in** all probability, be determined by their own idiosyncratic behavior. However, such individuals may also serve to stimulate positive attitudes towards groups of which the assimilated **non-Inupiat** are members.

Some transients will also be recognized **for** the contributions they may

accomplish through their administrative **or professional skill**, however, such individuals are extraordinary and do not generally shape **inter-ethnic** attitudes.

Increasing **interethnic relations** will **likely** pattern themselves after those which presently exist as **described** by **World Associates** (1978) .

**Non-Inupiat** population **growth in** the smaller **community will** stimulate a shift to a **model** which is characteristic **of Barrow interethnic** relationships. Onshore **oil** and gas exploration and development **will** continue to encourage growth on the North Slope either directly or indirectly through its secondary effects on the area economy. An **influx** of additional **non-Inupiat** to the area for purposes **of working** at professional and labor intensive **occupations will** increase the level of contact between ethnic groups.

**Barrow** presently has the highest population **of** both **Inupiat** and **non-Inupiat**. The widest array of behaviors and the greatest intensity of contact occurs in Barrow. Relations at the individual **level** may depend on the degree of actual face to face contact and the degree of competition which results from employment, housing, perceived **social** status, and also the length **of** stay of a **non-Inupiat**. Increases **in** both **Inupiat** and **non-Inupiat** populations through **immigration** from smaller communities or from areas **outside** the North Slope will intensify the potential perceived competition **in** the above areas and hence increase the general **tensions** between groups. Another key factor at the Individual or subgroup level **is** the particular racial biases one brings to bear on **interethnic**

**situations.** Greatest intensity **will** be felt at the interpersonal **level,** yet extremes at this level may affect the **views of** peers. **Hostility** toward the migrant **non-Inupiat** will continue to be expressed by the older **Inupiat** through social isolation or refusing to acknowledge establish relations with the new **non-Inupiat.**

The younger **Inupiat** may also express their hostility through social isolation, verbal encounters or other direct overt actions. In return, **non-Inupiat** generally tend to be less tolerant of any perceived abuses, and verbal abuses may occasionally lead to physical violence. Such incidents are more apt to occur where perceived competition for labor employment is greatest. At the professional employment level, **interethnic** relations are characteristically of a silent, social **isolation** nature, with few opportunities to socialize outside **of** the work environment.

**Social** relations outside of the work environment are noteworthy because they often occur in conjunction with alcohol and marijuana consumption. In this context, the usual formal restraints relax. **With** inhibitions further lowered due to the intoxicants, **hostilities** are more apt to be expressed.

**Inupiat** have repeatedly expressed a strong sense of ownership **of their** land and tend to **view non-Inupiat** as **visitors** to the North, **Non-Inupiat** tend to feel just as strongly that they have a right to **remain in** the Arctic and to assert themselves **in** all? areas, such as employment, housing, and **taking of** fish and game. Tensions naturally develop **in** such **situations.** Many **non-Inupiat** also **view** the North **Slope** as a **frontier** area in

which social **prohibitions** may be relaxed and economic and **social ex-**  
p citation are acceptable. Situations arising from these circumstances  
a so serve **to intensify and prolong** hostile feelings between groups.

**Interethnic** relations in smaller communities are more characteristic **of**  
earlier times when **non-Inupiat** were a distinct minority, **quite** dependent  
upon **Inupiat** for assistance in dealing with the physical environment  
and also-for companionship. **Inupiat**, on the other hand, saw more **bene-**  
**fit** than competition in the outsiders and, in fact, may have viewed  
**non-Inupiat with** their array of western material goods as a resource.  
The **non-Inupiat** was a noncompetitive livelihood position, differences  
between traditional and western religions were for the most part resolved,  
and work and social relations were relaxed.

To a degree these circumstances still prevail in the smaller communities  
outside of Barrow. **Non-Inupiat** are less than 10 per cent of the **popula-**  
**tion** and usually short-term residents associated with the school system  
or itinerant professionals who provide a service. **Non-Inupiat** depend  
on **Inupiat** companions for assistance in dealing with such things as rec-  
reation, hunting, environment, and securing water, The smaller communi-  
ties also afford a better opportunity for **Inupiat** and **non-Inupiat** to get  
to know one another at a deeper level. While differences exist, they  
are generally subject **to** less stressful situations than may arise at  
Barrow. Alcohol and marijuana are severely frowned upon by community  
leaders and thus are less apt to be a part of any social activity.  
**Social** proscriptions tend to discourage any form of abusive behavior.

The increased **non-Inupiat** population in the villages is usually associated with expanding educational programs and North Slope Borough Capital Improvement Program construction projects. Many **of** the new arrivals bring with them attitudes that reflect the negative side of the larger social environment at Barrow or outside the North Slope. Since all of the North Slope communities have limited employment opportunities and cash is becoming an increasing necessity, the new **non-Inupiat** are being seen **as** serious competitors for a scarce resource--jobs.

Increased development associated with the construction and operation of the **oil** pipeline and NPR-A activities has contributed to fostering a new view of **non-Inupiat**. These developments are perceived as threatening to the **Inupiat** subsistence livelihood, and the **non-Inupiat** who works in the communities may find himself as the symbol of that threat.

Barrow may serve **as** a model of **interethnic** perception and behavior. These new attitudes may also be adopted in smaller **communities**. The current picture in the smaller communities is a growing similarity to the **interethnic** relations of Barrow, particularly among young adults, and movement away from the more open and sharing relationships which characterized the past and persist into the present.

#### SOCIAL HEALTH

As indicated in the previous section, perceived changes in the social environment are often accompanied by disruptions of a more tangible

nature. Social health **is** the **generic** term **given to** the sphere in which these disturbances manifest themselves. Social disturbances are generally accepted as valid indicators of problems **at** a deeper psychological **level**. Increased rates of crime, particularly against people, have been noted for Barrow. Alcoholism or alcohol abuse among **Inupiat** and **non-Inupiat** is seen as a major area of concern by both groups. Drug abuse, including some indications of heroin use, are evidenced in **Barrow** and at least one other smaller community in the study area.

Increasing emphasis on material from a Western culture which requires employment, including cash income, decreasing time spent on the land and hunting game due to restrictive subsistence regulation and animal decline, and modernizing equipment and facilities which reduce the time required to obtain such necessities as food and water, all produce frustrations and more available time. At the same time, there is a lack of substantive activity with which one can **fill** this new leisure time. Traditional family oriented activities are being replaced by outside recreational activities, including social drinking. During periods when subsistence or work activity is slack, frustrations over lack of constructive recreation opportunity, lack of employment, and discomfort over the **in-**creasing **non-Inupiat** population may spill over and become disruptive to other family activity. This situation may create **intrafamily** strife and tension. Older family members may become uncomfortable with the amount of drinking and the accompanying volatile situations and frustrated by their inability to cope with situations that arise. Joining the social activity or leaving the house are two extreme alternatives.

Social frustrations may manifest themselves through actual physical abuse between family members caught in the midst of change. **Particularly**, relations between husband and wife and between parents and children may be subject to expression of frustrations through abuse. The close physical proximity of the **Inupiat** social world, with its unsolved housing shortage, intensifies this potential. Pressures from immigration of **non-Inupiat** from outside the North Slope and from **Inupiat** from other communities intensify the competition for housing, jobs, and even in recreational games in some instances. The increased frustrations may then be manifest in drinking and violent expression toward family members who are close.

Increased immigration of **non-Inupiat** offers opportunity for some to purchase an array of psychoactive drugs which again may intensify the feelings and expression of hostility and frustration. As the frustrations mount and the opportunity to confront the **non-Inupiat**, who are perceived as the cause, increases, violent intergroup events may increase. Such actions are not **condoned** by the **older generation Inupiat**, though they too are feeling the frustrations of the rapid social, political, and economic changes **occurring** in their **land**. This circumstance aids the breakdown in **communication** between the generations and hence the opportunity to pass on knowledge, tradition, and to continue the bonds of the extended family that has been the cornerstone of **Inupiat** culture.

Another major impact will be the increasing and expanding development of infrastructures directed toward dealing with these growing social

problems. These include greatly expanded school, **public** safety, and **health** and **social** services facilities and staffs; an increase of problem specific programs, (alcoholism, child neglect); and continued support of the Indian Health Service hospital **at** Barrow and **active** community **groups** **such** as Mother's Club, Lion's **Club**, and churches. These may be **in** addition to **or part** of the **North** Slope Borough programs which have created a major new infrastructure **dealing with** human needs.

Clearly, activities which produce negative impacts offer the opportunity to mitigate certain **of** these through development of task-oriented infrastructures. A cyclical situation is produced, however, **as** these new infrastructures each have impacts of their own, such as producing a job market which draws more immigrants to the area and providing substantial cash advantage to those **Inupiat** who choose to work instead of pursuing a subsistence life-style. It is important to note that the necessity of both subsistence and cash to the emerging economic structure of the North Slope communities also affects the nature of social relations. Another problem **created by** initiating a system of infrastructure response is that services and assistance cannot be equally or proportionally distributed among the communities. Resentment is stimulated in outlying villages toward the political systems and governments involved as well as toward employees **of** the **social** service programs.

With the development of social service infrastructures, new education and training demands are **placed** on those seeking employment. At issue is the concept of local involvement and control versus the importation of labor



to **set up** and manage the new systems and programs. During a **non-OCS** scenario it is expected that nonresidents with technical **skills** will be required for another five years, at which time **Inupiat** will have acquired skills and interest in such programs and prove capable of total operation. The only exception to this **will** be highly skilled professionals, such as medical staff and certificated educators, although inroads are presently being made in these areas as well. As the **Inupiat** obtain education in various professional areas, control of the developing programs **will** be regained. Maximum **Inupiat** involvement could have a concomitant effect of reducing tensions between ethnic groups because of growing familiarity of each others' systems, cultures, and goals.

#### FAMILY RELATIONSHIPS

Survival of the **Inupiat sociocultural** system depends on maintenance of a traditional family organization with reciprocal responsibility between members and generations. This system is strengthened and maintained by patterns of sharing and cooperation. These values and actions permeate all aspects of **Inupiat** life, whaling, hunting, fishing, and working at cash-producing jobs. Residence patterns still reflect these attitudes and values. However, new housing developments are presently having a dramatic effect, with many extended families no longer living together in a single dwelling. Some elders are establishing themselves in housing separate from their offspring, often due to frustration with the disruptions of drinking and misunderstandings occurring at present. If no further major disruptions occur **while** family resident patterns and **rela-**

tionships are being reestablished under the new living arrangements, the family organization may be able to adjust to and accommodate the new pattern.

The traditional sharing feasts that have been incorporated into Christian celebrations play a strong role in lessening the impact of change. The school calendar has been adjusted to **permit** students to participate in traditional obligations required in hunting, whaling, and fishing. At the same time a growing **Inupiat** language and culture program exists which can strengthen **Inupiat self** identity and also serve as a mitigating force against total disruptive change in perceived values and social and economic actions. Even with large-scale participation in a cash economy by some family members, traditional obligation and values operate to keep cash earners as contributing **members** of the subsistence complex by supporting other family members in traditional pursuits. This has mutual benefit in that cash and subsistence are shared resources that have positive benefit to both sectors of the family. Again the cyclical aspect of impact is operative: impacts from the **non-OCS** scenario also allow production of mitigating **adaptation**. Given enough time **without** compounding impacts, a form of the **traditional Inupiat** family **structure** and system will retain its role as the cornerstone of the **Inupiat sociocultural** system.

## LANGUAGE

**Inupiaq**, which is spoken by the vast majority of North Slope **Inupiat**, has been outlined as a distinct **sociocultural** category since it functions

as a social phenomenon as well as a means of communication.

The ability to speak **Inupiaq** indicates differences in group references and life-style expectations. **Inupiaq** has served as an indicator of cultural identity by separating an ingroup from an outgroup and also promotes intimate social bonds between older and younger generations.

The social dimensions of **Inupiaq** reflect changes occurring in the North Slope region. The individual's use of **Inupiaq** and English results from contact between the cultural groups or institutions. The increased use of English has been inextricably bound up with the influx of **non-Inupiat**, **interethnic** relations and marriages, and introduction of western institutions which are dominated by the use of English. The socially recognized domains of **Inupiaq** and English will undoubtedly manifest **themselves** in subsistence and economic development situations.

Impacts on social behavior are **also** evidenced within the expanding bilingual educational programs. To varying degrees, the programs have impacted the social roles, with a predominance of females employed as language experts in the schools. Social patterns, economic benefit, and **local** politics are certain to be affected to some extent by these circumstances.

The maintenance of **Inupiaq**, linguistic impoverishment in both English and **Inupiaq**, the increased use of English, or the adoption of **Inupiaq** by **non-Inupiat** should reflect social and cultural expectations. The nature

of language use should be an indicator of the acceptance or rejection of cultural pluralism.

### Non-OCS Summary of Impacts

The forces of change that began during the late 1960's and the early 1970's will continue to impact the Beaufort Sea Region and its traditional communities through the year 2000. The primary agents of change during the **non-OCS** scenario are identified as follows:

- Onshore oil and gas exploration and development
- North Slope Borough
- Arctic Slope Regional and Village Corporations
- Subsistence Regulations

Petroleum-related activities, including continued **trans-Alaska** pipeline development, **NPR-A** exploration and development, the natural gas pipeline, and Arctic Slope Regional Corporation leases and developments, will impact Beaufort Sea communities in terms of the direct employment it provides for permanent residents and the employment of nonresident migrants.

The employment of the permanent population in the referenced **petroleum-**related activities will increase cash income. As the population becomes

more financially involved with such obligations as house payments for the houses constructed by the North Slope Borough and private construction, they may be under greater pressure to participate in petroleum development employment. If a significant number of the permanent population seeks employment in the petroleum industries and if they are not successful in obtaining employment, adverse impacts will occur. Negative attitudes toward the migrant, **non-Inupiat** employed population and the development activities will undoubtedly heighten **if** the **Inupiat** believe they are not benefiting from development activities. Historical analysis of previous periods of economic development has not demonstrated that participation in employment activities decreased subsistence activities significantly. This, of course, was contingent on a **viable** natural resource population.

Employment of a migrant population poses **interethnic** repercussions as well. The attitude of this population toward the **Inupiat** and that of the **Inupiat** toward migrants will largely determine the type of relationships that develop. Interpersonal relations ranging from intermarriage to open hostility, depending on such factors as noted above, are possible under prolonged contact. The migrant population may also **be a** continuing source of drugs and alcohol. The greatest potential impact from the migrant population, however, is pressures they may exert on wildlife through sport hunting and fishing activities. In addition to the **com-**petition for limited resources, this may also result in increased and enforced state and federal hunting and fishing regulations. Such actions would most severely affect the permanent population, who in **all**

probability would resent the regulations and restrictions on subsistence pursuits.

The major impact of oil **and** gas developments will be the revenues they generate for the North Slope Borough, which, in turn, will be **the** primary and direct agent of change. The greatest potential negative impact of the **non-OCS** petroleum development is the possible adverse impacts on the environment and the natural resources on which the **Inupiat** depend. The uniqueness of the **Inupiat** culture has been attributed to their continuing direct relationship to their environment. Negative impacts to their wildlife resources **wou**'d be disruptive to the entire **socioeconomic-** subsistence complex.

At an institutional level, the North Slope Borough has interacted as a political force with the major impacting onshore petroleum development forces. The North Slope Borough initiated action to insure that the permanent population shared in the benefits of development through its taxation powers. The Borough has also attempted to control development in terms of mitigating potential negative impacts on the subsistence economy. **W**'thout question, the North Slope Borough has been the primary institution which served to protect the **sociocultural** character of its population. From population projections of the **non-OCS** scenario, it appears that the **Inupiat** population will continue to have the political majority and control of the North **Slope** Borough.

The North Slope Borough will continue to effect changes within the socio-

cultural system through the **non-OCS** scenario. A primary impact at the individual level will be in providing a continuing source of employment throughout all the traditional communities.

North Slope Borough housing programs hold the greatest potential for change. Extended family units which formerly occupied **single** dwellings are in the process, and **will** continue throughout the **non-OCS** scenario as the housing program proceeds, to separate family units. Some members of the family unit will move into the new houses, while others remain in the older houses. It appears that the family units will outwardly **resemble** the nuclear family unit characteristic of Western societies. Whether the extended **family** unit, dispersed into two or **three houses** will continue to interact as the extended family characteristic of the Inupiat, remains unknown. The cost of the housing and its maintenance will also require that a steady cash income be available.

The housing program which has allocated units for senior citizens may impact both young and **old**. Elderly grandparents living with the extended family directly influence socialization and education of the young.

The North Slope Borough **will** also continue through the **non-OCS** scenario to advance structural changes with the development of specialized social units. Social needs which were once met by the family and which were generally not met by the State of Alaska programs are now in the process of being incorporated by the North Slope Borough (health and **social**

services, e.g., senior citizens' program, child advocacy program, and health and training programs).

As noted previously, the Arctic Slope Regional Corporation and the village corporations have significant potential for effecting **petroleum-**related change in the resident population. The significant difference between the Native corporations and outside petroleum interests is that the majority of the **Inupiat** population would share in the benefits of development as shareholders. It is **also** anticipated that Native shareholders will also be employed in the Native development enterprises. Under terms of the Alaska Native Claims Settlement Act **of 1971**, in 1991 the Native corporations become subject to taxation like other **profit-**making corporations. It can be assumed that the corporations will have to intensify their development activities to meet their financial obligations. Such actions may potentially lead to conflicts between subsistence interests and development requirements.

The greatest threat to the maintenance of the **Inupiat sociocultural** system is adverse influence on the **socioeconomic** subsistence complex, which may stem from three sources:

- Negative **impact** on **wildlife** resources because of petroleum development influences
- Decreased participation and support of subsistence activities
- Subsistence regulations



Currently the subsistence economy is restricted by caribou and bowhead whale regulations. If these severe restrictions on the major subsistence resources continue for a prolonged period, they could destroy the present socioeconomic-subsistence complex. Other potential regulating forces may derive from NPR-A policies, and (2) legislation stemming from the Alaska Native Claims Settlement Act, and international treaties on migratory fowl. State regulation may also be developed and enforced with the increased sport hunting and fishing activities within the **Beaufort** Sea Region.

Cumulative effect of all impacts and forces of change cannot be conclusively asserted. During past periods of economic development the **Inupiat** demonstrated a capacity to make ecological adjustments and adapt to the demands of the macroeconomy. However, through each period the Inupiat maintained a direct relationship to their environment. While they participated in employment opportunities, they also continued their subsistence activities, which they intensified once the development activities decreased. In the **non-OCS** scenario, the major differences are the development of the North Slope Borough, which is stimulating internal structural changes, and the increasing curtailment of subsistence activities. It appears that the **Inupiat** culture would be **severely** threatened if the Inupiat's relationship with their environment and utilization of the natural resources were destroyed.



## 111. OCS SCENARIO

### Introduction

The following chapters **will** first identify the potential impacts associated with **oil** and gas development in **the** Beaufort Sea Petroleum Development Region that **will** affect the **sociocultural** systems within the area. These potential impacts have been described by **World** Associates (1978); **ISER** (1978); **Alaska Consultants** (1978); **Dooley** and Associates (1978); and **Dames and Moore** (1978). An analysis of each of the four identified **OCS** development scenarios **will** be made **of** the conjunction relations of the identified impacts and the **sociocultural** categories which have been outlined **in** the **first** chapter and the cultural processes that are **likely** to emanate from the conjunction. The final analysis will summarize the overall dimensions of projected change within the Beaufort Sea region **sociocultural** systems.

### Summary of Impacts

#### POPULATION

The population pressures on the **sociocultural** systems within the OCS scenario will, as in the **non-OCS** case, distinguish three categories:

- **Inupiat** population increases

- **Non-Inupiat** population increases in the traditional communities
- population increases associated with **onshore and offshore** petroleum related-activities

The increased population **associated** with the **OCS** development **will** affect the **sociocultural** systems as **it impacts** the wildlife resources through potential **sport** and recreational hunting and **fishing**. The **total population increase will** also have a direct relationship on **North Slope Borough** tax revenues,

Since the population **increase associated with** petroleum developments will be restricted to **enclave** sites **away** from the traditional **villages**, direct **interethnic** contact **will** be **limited**. However, attitudes towards this population may influence **interethnic relations** within the traditional **communities**. The population **may be** viewed as symbolizing development, **which** may be perceived by the **Inupiat** as both positive and negative. **Development-oriented Inupiat** may regard **their** presence **as** beneficial, **while Inupiat who** perceive development **as** detrimental to subsistence **and their way of life** may view their presence **as negative**.

Demographic **shifts** between the **Inupiat** communities resulting from **employment** situations may also affect **subsistence, including** increasing or decreasing hunting pressures on resource game, cooperative activities, and sharing patterns. **Family relationships may also be** adversely affected if prolonged absences result,

## EMPLOYMENT

OCS development will generate employment opportunities in the traditional communities through accrued tax revenues to the North Slope Borough; however, the level of Inupiat participation in OCS employment cannot be determined. No known studies exist comparing Inupiat occupational skills and union membership with anticipated OCS-related job and union requirements. The permit for the construction of the trans-Alaska pipeline stipulated Alaska Native hire and contract awards to Native-owned companies. Although the success of training programs is not known to have been evaluated, they were offered to Alaska Natives to permit their participation in pipeline construction. Native counselors were also stationed at pipeline camps to assist in the adjustment to living and working at the pipeline stations. The State has taken a strong position of Alaska hire in all development activities, but there are no indications that specific affirmative action or training programs will be developed to encourage Inupiat hire. Exclusion or limitation of Inupiat hire in OCS development activities will foster resentment towards OCS and the employed population and may also stimulate negative interethnic attitudes in the local communities.

North Slope Borough and Arctic Slope Regional Corporation employment opportunities are expected to increase during the OCS scenario. Village corporations will also be expected to increase their activities, in part as a response to the tax obligations they will incur after 1991 when Native lands become taxable. As noted, the tax base that will be

derived from **OCS** petroleum development **will** stimulate expansion of North Slope Borough programs and construction projects, which will serve to provide increased employment opportunities within the local communities. It can also be anticipated that Native corporations will respond to **OCS** development by bidding on **various** support contracts with the petroleum industries, which will also create additional jobs for their shareholders and local residents.

## ECONOMY

The principal economic impact of OCS development **will** be to create an additional tax base for the Borough and to expand business opportunities for the Native regional and village corporations. The growth of the **local** economy will **result** from the increased expenditures by the Borough and the investments and developments of Native corporations in the region. Native corporations on the North Slope are expected to expand their business activities since their lands become taxable in 1991 unless the Alaska Native Claims Settlement Act is amended to extend their nontaxable status. The manner in which the North **Slope** Borough and the Native corporations expend their revenues and income will impact the **sociocultural** systems.

Increases in exogenous employment and income within the borough will **stimulate growth** in communities outside of the North Slope. Most workers will be transient **non-Inupiat** living in industry enclaves, and they **will** not expend their earnings in the region. The growth asso-

ciated with increased income and demands for goods **will be** accrued primarily to the **larger** urban communities.

While economic **growth** can be attributed **to** increased employment, higher personal income levels, and state spending, growth in North Slope **traditional** communities **will** be limited by an extreme cost of **living** differential compared to Fairbanks or Anchorage and by the absence of **local** stores which can supply the enlarged demands of the **consumers** whose personal incomes are significantly greater than **former** periods. However, the differential is expected to decline as the North **Slope** market increases. **Until** then, permanent North Slope residents will probably continue to purchase a significant portion of their goods from **retail** stores in Anchorage and **Fairbanks**.

#### MAN-MADE ENVIRONMENT

##### Education

OCS development will probably not require expansion of educational **facilities** beyond the **Borough's** current projections through the year 2000, However, the primary impacts to the **sociocultural** systems will result not so much **from** the structural facilities themselves, but **rather** from the functional variation, **An exception** is that the **improved** and expanded educational and recreational facilities, along with housing upgrading may increase teacher **longevity** in communities--a positive impact. Quality **and** relevance of teaching may be improved by teachers who have gained familiarity **with** the **people** and their culture,

The increasing proportion of whites in Barrow anticipated in all OCS development scenarios can lead to a demand for educational curriculum that varies from the Inupiat bilingual-bicultural orientation. On the other hand, the expanded revenue base that is expected with OCS development may allow expansion of Inupiat and arctic oriented educational studies. The increased revenues may also provide funds for the recruiting and training of Inupiat teachers and teacher aides.

### Public Safety

OCS development will require a minimal expansion of public safety facilities and staffing in Barrow. Expanded revenues to the North Slope Borough may allow for development of recruiting and training programs that will facilitate Inupiat hire.

Public safety work loads may be affected by the increasing proportion of whites anticipated in Barrow during all OCS scenarios. Negative interethnic contact and relations may lead to increasing levels of social disturbances. The composition of the public safety force, which is primarily non-Inupiat, may also intensify interethnic problems and lead to resentment of regulatory duties.

### Fire Protection

All OCS scenarios call for impacts similar to, and not in addition to, the non-OCS development scenario. Again, focus in Barrow may shift to



improving the quality of service through stabilization of staff and increased training opportunities for local fire fighters.

Smaller communities will benefit from expansion of the training and support opportunities provided through Barrow under the OCS case. Monies available may be shifted from purchase of equipment to maintenance and training of staff. Progress can be made in providing home equipment for warning and fighting of fires. Increased ability to deal with fires adequately will lessen fears and improve the quality of **life** in all communities. The planned expansion of fire-fighting and fire prevention activities by the North Slope Borough will meet the needs of each community.

#### Recreation

With the exception of another gym and playground for Barrow, no **appreciable** impacts may be expected for additional recreational facilities beyond those in the **non-OCS** scenario. An increase in emphasis on quality programs and maintenance of existing facilities can be expected during the OCS scenario.

The increased proportion of whites in Barrow expected during OCS development may result in demands for varying uses of present recreational facilities. Currently, recreational activities are dominated by basketball throughout the entire year. Conflicting requests for the use of recreational facilities may result in **interethnic** tension. The white

population may also begin to organize recreational and cultural activities that are characteristic **of larger** urban communities,

### Utilities

Water, sewage and **solid** waste disposal, gas, **and** electricity for the **Barrow community** will remain areas of critical concern. Consumption patterns will place demands upon physical plants, which **will** determine the impact on the man-made environment. Key **to** this situation is development of a water supply capable of handling increased demands. Alaska Consultants, Inc. (1978) indicated that facility construction **beyond** the **non-OCS** scenario may not be needed unless development outside the presently platted **Barrow-Browerville** area occurs. Quality of life will be affected by any inability of the system to **supply** these **services** to **any** area that is developed in or near Barrow. Services will be adequate in other communities.

### Housing

Alaska Consultants, Inc. (1978) cited increased housing needs **in** all **communities** during **OCS** development. Most new housing is now **constructed** by the Borough, and this is expected to continue. The housing impacts on the **sociocultural** system **described** for the **non-OCS** case can also be applied to the **OCS** scenarios.

Barrow will be the scene of **additional** housing impacts that may affect

the **sociocultural** systems. The **lack** of available land in **Barrow will** require more multi family dwelling units. No studies **are** available to assess the effect of the introduction **of** multi family units among a people who have not traditionally lived under these conditions. Although traditional housing is **small**, privacy between families and direct access to the outside is possible. The new multi family units may lead to **an** unfamiliar type of crowding which may cause further tension. Furthermore, traditional houses are adapted to **Inupiat** cultural and functional needs, whereas multi family units may stifle subsistence activities because of **a** lack of adequate space to prepare and preserve goods, such as the lack of drying racks, ice cellars, and space for storing and repairing snow machines.

The lack of available land for constructing new houses may foster resentment toward government. The most suitable lands for expansion of Barrow are under the jurisdiction of the U.S. Navy.

#### Local Government Finance

The OCS scenarios developed by **Alaska** Consultants, Inc. (1978) indicated that development will provide an adequate tax base **to** insure that the vigorous capital improvements program of the North Slope Borough will be viable through the year 2000. Although there is no firm indication of areas where expanded programs may occur, money will be available to insure that maintenance and upgrading of existing and planned facilities **will** take place without placing increased burden on local communities and individual citizens.

## NATURAL PHYSICAL ENVIRONMENT

Environmental impacts and restrictive hunting regulations that **adversely** affect the maintenance of subsistence may cause grave ramifications throughout the **sociocultural** systems. The following potential environmental impacts associated with **OCS** activity that may affect **the socio-cultural** systems have been identified from Dames and Moore (1978).

### Water and Waste

Water withdrawal may adversely affect overwintering fish and water pollution from offshore drilling and waste disposal may **adversely** affect the **whale** population, **Alter**ing of drainage patterns may **affect** water quality at stream **cross** rigs.

### Sand and Gravel Extraction

Borrow extraction may adversely affect marine mammals, fish, migratory **fowl**, and caribou populations. Construction of **artificial** soil islands may adversely affect **belugas**.

### Fish and Wildlife Resources

Any **increase** in sport hunting and fishing resulting from **exploration**, development, and production of petroleum would directly affect **fish** and **wildlife** populations. **If** care is not taken **in selection** of staging

areas, camps, and **pipeline routes**, caribou populations may be disturbed.

## REGIONAL TRANSPORTATION SYSTEM

Regional transportation impacts during OCS development on the **socio-cultural** system replicate the **non-OCS** but are more intense. The most serious threat could result from adverse impacts on wildlife from land, air, and marine traffic which would, in turn, decrease subsistence activities in affected areas and possibly have long-term deleterious impacts on affected species.

### Camden-Canning Scenario

## SUBSISTENCE

Subsistence is a socioeconomic complex involving appropriation, **utilization**, and distribution of natural resources for food, clothing, and other items according to established cultural patterns within a system of social relations. Subsistence roles include the active harvester, financial sponsor, and subsistence recipient. Individuals may alternate between **roles** and sometimes perform the functions of one or more. The subsistence economy requires financial support, which is obtained through a variety of mechanisms as described by Worl Associates (1978). Because of impinging forces, notably the caribou and bowhead whale crises, subsistence has become the symbol of **Inupiat** culture, and perceived threats to subsistence have therefore aroused highly emotional

response and stimulated political **organization** and action, Subsistence can be affected by a number of possible impacts identified in the previous chapter. Changes within the subsistence complex can **stimulate ramifications** throughout the entire **sociocultural** system.

### Population

The natural rate of increase projected for the **Inupiat** population through the year 2000 is not expected to affect the natural resource population or alter subsistence patterns. Alaska Consultants, Inc. (1973) noted that demographic shifts are expected to be lower during the Camden-Canning scenario except in Kaktovik. Because of the community's proximity to the proposed lease sale area, a higher rate of growth is forecast, with perhaps some former residents returning.

If the demographic shift comes **primarily** from one community to Kaktovik, positive impacts could accrue to the community experiencing the **out-**migration. Hunting pressures on the community's wildlife resource base would decrease. Hunters who remained would not need to travel as far to obtain game. **However**, if a substantial **number** of active harvesters leave, **elderly** citizens, who are the **primary** subsistence recipients, may be **left** without a stable and reliable access to subsistence products.

A **significant** population migration to Kaktovik would place additional pressures on its resources. The **Inupiat** migrant to Kaktovik can be **ex-**pected to either hunt himself or purchase or trade for subsistence

products. **Kaktovik** hunters **would** have to **expand their** hunting range with hunting pressures increasing.

**Non-Inupiat** migrants to the traditional communities projected for the Camden-Canning scenario can be expected to impact **Inupiat** subsistence. Alaska Consultants, Inc. (1978) noted that the primary increase is anticipated to occur at Barrow. The potential impact from this population is an increased level of sport hunting and fishing, which **will** intensify pressures on **the** wildlife population and stimulate competition between subsistence and sport users. Increased sport hunting can be expected to stimulate enforcement of regulations by federal and **state** agencies. The **Inupiat**, who have hunted the area for centuries constrained only by **environmental** and natural factors until just a few years ago, can be expected to react negatively to further impositions of governmental regulations and competitive use of the resources by sport hunters and fishermen.

The conceptual assumption advanced by the semantic designation of "enclave" sites and development presupposes that activity occurs within a bounded area and that a degree of isolation from the surrounding environment and population is maintained. However, human and social processes do not **occur** within a vacuum, and activities permeating from enclaves are **likely** to diffuse impacts to the surrounding areas. Interpersonal contact between enclave and indigenous populations can be expected to occur, and human influences on the environment within the enclave area can be expected to affect the neighboring communities. Further, impacts

can occur without direct **interpersonal contacts**, such as attitudinal changes.

The immediate effect on subsistence deriving **from the** Camden-Canning work force, which may range well over 1,300 during the manpower peak, will result from recreational activities (e.g., observation **of** wildlife, particularly the musk-ox) and movement between production **wells**. Impacts **on** subsistence are not limited to competitive consumptive uses, but also result from human presence and activities which disperse game. **Kaktovik**, " 00 kilometers from the Camden-Canning **area**, will likely be the **communit**y affected. Subsistence users who may have traditionally hunted and fished in the Camden-Canning locale and who will have to alter their land use patterns are **likely to** be frustrated by **the intru-**sion and dispersal of game.

Dames and Moore (1978) suggested that a potential exists for Kaktovik residents to act as guides for photographers and hunters, and this would create some employment opportunities. As will be noted in the following **sect**ion, however, employment situations may serve to **initiate** both **nega-****tive** and positive impacts.

#### Employment/Economy

The Camden-Canning scenario development will generate employment opportunities within all the traditional communities, The expanded tax base available to the North Slope Borough and the increased business oppor-



tunities open to **Native** corporations will stimulate increased **expenditures** and investments in the communities. Greater employment opportunities within the villages will inhibit **outmigration** but stimulate **immigration** of **non-Inupiat**, particularly to Barrow.

Direct employment opportunities within the Camden-Canning development are not anticipated to involve any significant numbers of permanent residents. **Alaska Consultants, Inc. (1978)** suggested that employment opportunities are anticipated within the local villages which should limit the need or desire to seek **employment** within the Camden-Canning complex. However, if employment opportunities do not materialize within the local villages and **should** any number of **Inupiat** seek and not obtain employment at the OCS petroleum center, resentment towards petroleum development and **the** employed population could affect **interethnic** relations within the permanent communities.

The nature of increased employment impacts associated with the Camden-Canning scenario are similar to those described for the **non-OCS** case. Employment impacts may affect the socioeconomic subsistence complex by increasing availability of cash **and altering levels** of participating in subsistence activities.

Maximum **Inupiat** employment appears **to** depend on a liberal, flexible **employment** schedule which permits the active harvester to participate, at least periodically, in the subsistence rounds. Alternating periods of work and leave time, such as two weeks of work **and** one week of leave,

that are characteristic of enclave employment **patterns** seem to be compatible with subsistence requirements. The North Slope Borough and Native corporations have informally adopted liberal employment policies conducive **to** maintaining subsistence pursuits. The potential threat to subsistence associated with employment demands **mostly involves** inflexible work schedules.

Time constraints imposed by employment which result in decreased subsistence activities affect the individual hunter, the family, and community. As noted in the **non-OCS** case, decreased subsistence could affect the diet and nutritional development of the population. Senior citizens, who receive substantial portions of **their** food through established sharing patterns, would be the most seriously affected. The reduced physical activity with decreased subsistence pursuits would also adversely affect the subsistence harvester's physical well-being. Decreased subsistence activities could also weaken sharing patterns and communal activities **which** serve to bind the **members** of the community. Trading **patterns** between communities, **which** also serve to strengthen ties between them, **could also** be adversely affected with decreased subsistence. A long-term effect resulting from decreased subsistence is related to the lack of training **available** for young hunters by older, experienced hunters,

Increased **income** associated with expanding employment opportunities available **in** the Camden-Canning **scenario** may facilitate the establishment **of** additional whaling **crews**. As noted in the **non-OCS** case, a

greater number of crews has improved the efficiency of whaling by reducing the number of whales lost. Negative impacts from an increased number of whaling crews would result if a sufficient number of well-trained crew members was not available for each whaling boat.

The purchase of additional modern equipment, such as snow machines, may be possible in instances of increased income levels. Snow machines allow hunters to increase their subsistence range. As the Camden-Canning activities disturb the migrating patterns of the caribou, Kaktovik residents may have to expand their range to secure sufficient food. As noted in the non-OCS case, the use of snow machines, which on occasion break down, has promoted the establishment of hunting partnerships.

### Housing

Development of new housing and increasing construction of multi family units in Barrow are expected to affect subsistence. Alaska Consultants, Inc. (1978) has detailed the need for more than 130 additional housing units through the Camden-Canning scenario, with the greatest need in Barrow. Assuming that the North Slope Borough continues to participate in housing development, the expanded tax base expected with Camden-Canning development will allow them to construct the required units. Housing construction will also stimulate employment opportunities. The nature of housing impacts on subsistence is similar to that described for the non-OCS case.

Housing costs, including payments, rent, **utilities**, and **fuel**, will require access to a cash income, **which** may necessitate permanent employment. Restrictive employment demands may serve to decrease subsistence activities.

As previously outlined, current housing designs **and multifamily** units are not ideally suited to the **sociocultural** spatial requirements of the **Inupiat**. Subsistence will be negatively impacted to the **degree** that subsistence activities are discouraged because of the lack **of** areas in which to prepare and store subsistence resources. **On** the other hand, **family** ties may be strengthened by the need to return to the traditional family home to process and store harvested goods.

#### Natural Physical Environment

As previously reiterated **in** the **non-OCS** case, adverse impacts on the environment and natural resources **will** have a direct relationship to the subsistence complex. Impacts cannot be expected to uniformly affect the human population. Damage to **fisheries** would have a greater impact on the activities of the elderly, women, and children, whose primary subsistence pursuits are related to the **fisheries** resource. Although **men** engage in fishing activities, they are **also** extensively engaged in whaling and **marine** mammal hunting. **Negative** impacts on the marine mammal **population** would **initially** affect the activities of the male population but would decrease the resource **base for the entire** community.

## Water and Waste

Water and waste impacts stemming from Camden-Canning development **activities could** directly impact **the Kaktovik** subsistence economy **if** water withdrawal from the **Kavik** and Canning River deltas **should** adversely **af-**  
fect **overwintering** fish. Fisheries resources are expected **to** become even more important during the Camden-Canning scenario because of the **restrictive** quotas that are expected to continue **on caribou** and bowhead whale hunting. Threats to another subsistence resource will not only further reduce the food base, but may also affect sharing patterns associated with the fisheries resource. As previously stated, sharing strengthens family and community bonds. Fish is also important in trading for other products which are not **always** available locally.

Dames and Moore (1978) also cited a potential impact to the whale population should water quality be impaired from offshore drilling and waste disposal. Impacts to the whale population would have serious repercussions throughout **all** coastal whaling communities. **World Associates** (1978) described the extreme importance of the whaling complex to the **Inupiat**, which **not** only provides a substantial portion of their food base, but is the foundation of their **sociocultural** complex. Decreased whaling resulting from adverse impacts to the **whale** population through water pollution from offshore drilling and waste disposal and damage to their **food** source **would** reduce cooperative hunting efforts by the kin-based crew, the patterns of sharing between the crews and with members **of** the village, and the year-round feasts and ceremonies. Community **cohesiveness would** be weakened with reduced cooperative and sharing activities.

## Onshore and Offshore Gravel and Sand Resources

Dames and Moore (1978) outlined the possible adverse impacts on marine mammals, fish, migratory fowl, and caribou that may result from gravel and sand extraction as follows:

- Modification of aquatic habitat, particularly for fish
- Destruction or modification of gravelly channel substrate, which may eliminate fish spawning areas
- Alteration to the channel gradient which would block passage to fish moving to spawning or overwintering areas
- Entrapment of fish in floodplain depressions, berms, and settling basins
- Siltation which could reduce fish food organisms, smother spawning gravel beds, and adversely affect egg development and fry emergence

The construction of artificial soil islands may potentially pose the following problems:

- Disturbances associated with construction activities to the extent that traditional caribou calving areas, feeding areas, and travel routes are avoided

- The actual presence of an artificial **island**, borrow pits, **or** staging area may interfere with **beluga** calving **or** feeding **areas** or may block travel routes
- Underwater sounds emanating from operation on and **in** the vicinity of artificial islands could interfere with the animals natural signals, affecting their navigation and communication processes and influencing their behavior. Effects on calving **beluga** may take years to manifest themselves, such as by population decline.

**Gravel** extraction from the Canning River may affect overwintering fish, **while** offshore gravel mining operations could disturb the high-density ringed seal areas seaward of Flaxman and **Maguire** Islands. **If** gravel mining operations were to occur in the nearshore zone of the Canning River delta, they could affect the biologically productive area for food chain species.

Dames and Moore (1978) also noted that if operational facilities are developed between **Bullen** Point and Prudhoe Bay, potential influence on caribou movement exists. Care in selection of staging areas, camps, and pipeline routes can eliminate most conflicts except for disturbance of seals in the **Maguire-Flaxman** Island offshore zone.

### Transportation

Potential regional transportation impacts on subsistence associated with

the Camden-Canning scenario exist where traffic activity may affect the migrating patterns of wildlife population. Because of the season and limited period of migration of sea mammals of the Beaufort Sea coast, marine traffic which disrupts the harvest of marine mammals could result in serious impact to Inupiat food supplies. Marine mammals have become increasingly necessary because of the restrictive quotas on caribou and bowhead whale hunting. Traffic activity which caused the movement of wildlife out of the immediate range of the hunter in pursuit can serve to create tension and general resentment toward development activities.

Adverse impacts on marine mammals, fish, migratory fowl, and caribou populations that result in decreased availability to the Inupiat either through a reduced wildlife resource base or governmental regulatory actions would seriously affect the sociocultural systems. It can be anticipated that state and federal governments would adopt new or more vigorously enforce current regulatory legislation if OCS petroleum activities should result in decreased wildlife populations.

The most immediate impact of decreased wildlife resources would be a reduced food base, which would affect Kaktovik as well as other Beaufort Sea communities since the wildlife is migratory. Game other than caribou and bowhead whales has become increasingly valuable to the Inupiat because of the restrictive hunting regulations on caribou and bowhead. If restrictive measures remain in effect and Camden-Canning activity impairs caribou and bowhead whale stocks, adverse impacts to the physical and emotional health of the Inupiat could occur. Tensions within the



**traditional** communities and resentment toward development activities, the enclave population, and the government **because** of the hunting **regulations could** place further strain on **interethnic** relations.

Decreased subsistence because of damage to wildlife populations will place further pressure on the social bonds which serve to integrate the **community** by decreasing cooperative subsistence activities and weakening sharing patterns. Watching their traditional life-style change as a result of events over which they have no control will adversely affect the emotional and psychological health of the **Inupiat**. Political **organization** and action can be expected to intensify in response to increased pressures on subsistence activities. Because of perceived common threats to their way of life, bonds with Canadian **Inuit** (Eskimos) may be strengthened.

#### CULTURAL

The Camden-Canning development scenario poses several areas of threat to the cultural system. Although cultural values are the most difficult to define and assess, it is clearly manifested in the deep **emotional** attachment the **Inupiat** display towards their land and their repeatedly expressed desire to **maintain** their traditional life-style. Contrary to formal economic rationales, **assimilationist** theories, and even assumptions **about** migration to communities where employment opportunities **exist**, hundreds of **Inupiat** have returned to traditional land use areas. Three **communities**, Atkasook, Point Lay, and **Nuiqsut**, centered in areas of former his-

toric occupancy but which had been **continuously** used **throughout the** **contemporary** period, have been resettled. The communities offered **no immediate** or potential large-scale employment opportunities but **did afford** subsistence opportunities.

The population increase at Barrow, projected for the Camden-Canning scenario is anticipated to **be primarily non-Inupiat. Although this** population is not expected **to immediately and directly affect** the Inupiat cultural traditions, their presence over **time** will influence cultural traditions.

Although the **non-Inupiat**, whose numbers **will increase** during the Camden-Canning scenario, are expected to remain in the minority, **administrative control**, particularly evident in the school system and public safety staffing, will place them in a dominating position. As members and **representatives** of the **larger society**, which to all appearances **will be intruding to** a greater degree on Inupiat society than **vice versa**, will also give them a **decided** advantage. Their ethnocentrism and attitudes toward **the Inupiat** culture **will** particularly influence the **young**. Attitudes **which** view Inupiat cultural values as primitive, old fashioned or nonfunctional **will** be especially devastating to **interethnic relations** and a positive maintenance of cultural identity.

The increased number of **non-Inupiat** and intensified **interethnic** contact and **relations** will also promote the use of English, particularly as **required** by employment situations. Along with a concurrent decrease in

the use of **Inupiaq**, the effects **will** be on the perpetuation of **Inupiaq** in future generations.

Potential impacts to the environment and wildlife populations, which have been detailed by Dames and Moore (1978) for the Camden-Canning scenario, will impinge on cultural **va** values through adverse impacts to subsistence. Cultural values are **emb**dded in subsistence practices that emphasize cooperation and sharing. Decreased subsistence activities can also be expected to affect **Inupiat** dance and art, which are cultural expressions of their relationship with their environment. Subsistence activities allow the **Inupiat** to observe **anima**l form, behavior, and movement, which they imitate in their dance and art.

#### POLITICAL

Projected population increases during the Camden-Canning scenario are not expected to negatively impact **Inupiat** political control and majority positions on local community councils and the regional borough government. Most new population will be housed in industry enclaves, and it is not anticipated that they will establish local governments or participate in borough politics. **Non-Inupiat** population increases **in** the local communities are not expected to be significant enough **to** alter present political control. However, the **level** of population growth expected *in* Barrow may result in the election of **non-Inupiat** members to the **city** council. ,

Potential adverse environmental impacts which may possibly occur in the

Camden-Canning scenario **and** which may **serve** to **limit subsistence** will intensify **Inupiat** political organization and **action**. The Alaska Eskimo Whaling Commission would probably intensify **their** political and **legal** efforts should the Camden-Canning development impacts adversely **affect** the whale population or **its** food chain. **Perceived common** threats to the environment and resource base may **serve to** further **align** the **Inupiat** in Alaska, Canada, and Greenland.

As described in the **non-OCS case**, the **Inupiat** Community of the Arctic Slope offers a **significant** source of additional **political** power. With adverse environmental impacts, **it** can be expected **that** the **Inupiat** will search **for** means **to** protect **their** subsistence activities. The **tribal** organization has a **direct** trust **relationship** with the federal government under **the Indian** Reorganization Act of 1934, as amended in 1936 **to extend to** Alaska. **When** the International Whaling Commission acted to impose a zero quota on **bowhead** whale hunting during the **1978** spring season, the Secretary of Interior adopted the position that his office had a trust responsibility of protecting subsistence rights **of** the **Inupiat**.

#### INTERETHNIC RELATIONS

Two types of impacts have great importance to **interethnic relations--** those which are documented, such as **oil spills**, construction activity, and other **tangible** evidences of change and those which are perceived. Perceived impacts need not be documented **to** be quite **tangible**. It is enough that they are "felt" by a group to be occurring. There is no

difference in the importance of one over the other in terms of effect on **interethnic** relations.

Impacts are affected by a number of other factors:

- Proximity of activity to the impacted group or area
- Actual contact, such as working together, socializing, or the use of a **community** as a staging or transportation area
- Competition for such things as employment, housing, and fish and game
- Locus of control (e.g., does an **Inupiat** community or region remain tangibly controlled by **Inupiat** in a political, social, and personal sense?). **Interethnic** relations are particularly sensitive **to** this factor and in turn affected by all other factors to be discussed. -Fear **of** change is active in this category.
- Environmental changes (e.g., numbers of fish and game apparent, access to these affected by regulation and opportunity, or direct changes seen or perceived in any sphere, such as sea mammal habitat, the ice environment, addition of **pipelines**, roads and airstrips, and increases in associated traffic).

Each of these areas should be kept in mind as having serious ramifications for **interethnic** relations. Inevitably, this category has the effect

of making individuals and groups responsible for their "collective history," that is, every member of their group with whom the other group has had contact, or in the absence of actual contact, about whom one has heard. Generally, contacts between differing ethnic groups are discom-  
**forting** and potentially volatile based upon the preceding factors, All scenarios should be viewed in light of the cumulative impact from each category discussed.

Since activity for the Camden-Canning scenario will be staged away from North Slope communities and population, its visibility and direct inter-ethnic impact will be low. Dames and Moore (1978) cited potential environmental impacts that may affect the fisheries and wildlife as well as marine mammals, water quality, and subsistence for the community of Kaktovik. These impacts will affect perceptions of development and those associated with it to non-Inupiat in general throughout the North Slope area. This situation will serve to keep attention on negative impacts of development, straining interethnic relationships in all communities,

Kaktovik is the closest community to development in this scenario. Local hire will play a large part in determining the response of this community. If Inupiat community members are working in related activities, there may be a qualitative increase in relations between ethnic groups. Interethnic relations may take a decidedly negative turn if there is no local hire of Kaktovik residents in the Camden-Canning enclave. Although enclave development is being considered, the proximity of Kaktovik will undoubtedly insure some contact either during subsistence activities or

when workers occasionally enter Kaktovik for supplies, transportation, or during recreation breaks.

## SOCIAL HEALTH

Social health is the sphere in which tangible disruptions are evidenced in the **sociocultural** environment. These include but are not limited to the following:

- Crime
- Alcoholism
- Drug abuse
- Mental health problems
- Violence within the family, within the community

These disruptions are taken as indicators of a deterioration in the degree to which a community, family, or individual is adapting effectively to an impacting force or forces. Worl Associates (1978) noted that these indicators have been increasing within the North Slope area over a time roughly parallel to rapid socioeconomic and **sociocultural** change. These factors should be viewed in a similar context to that described for interethnic relationships. These behavior changes are evidenced by indi vi -

duals and are **too** often viewed **at** that **level without proper** attention to their role as indicators of serious **problems in ability at all levels** to cope with Impinging events.

Viewed **in** the context of compounding effects of **non-OCS development**, the Camden-Canning scenario **will** create an additional **burden on the Inupiat** feeling that their life-style is threatened resulting primarily **from the** potential environmental impacts described by **Dames and Moore (1978) that adversely** affect subsistence activities. This scenario **calls for** developing an area that is close to subsistence use areas **of Kaktovik. Competition** for fish, water, wildlife, and possibly **recreation** space (on the part of the workers) will be felt. Once development begins, a **feeling** of irreversibility may pervade the **Inupiat** population of the **region**, creating stress in addition **to** that created by activity described for the **non-OCS** case. Even the fact that Camden-Canning development is of the "enclave" type, the pervasiveness of these enclaves in **areas** that have traditionally been used by the **Inupiat will** be viewed in a stressful manner. Stress of this nature **is not** controllable at the **individual** level and will thus **build** up with other stress. The **cumulative** effect on the regional economy through the North Slope Borough **and the** Native regional corporation will further augment the perceived pressure to change one's life-style more towards the cash economic **benefits** that are available, Individuals and **families** may view the **competition for** the land areas used by Camden-Canning development activities as a battle that they are **losing**. **Potential** changes **in** the environment and animal ecosystems that may result from **Camden-Danning** development and that



cause a decrease in subsistence will be **viewed as** pressures towards cash economies and away from subsistence **life-styles**. To the extent that the passage of the Alaska Native Claims Settlement Act and the formation of the North Slope Borough and the **Arctic** Slope Regional Corporation were seen as efforts to protect their subsistence life-style, the **Inupiat** may feel betrayed or at least unsuccessful if they are **unable** to resolve the perceived threats to their life-style posed by adverse environmental impacts. A feeling of futility coupled with a perceived inability to participate or control the "new" system may manifest socially disruptive behavior.

Frustrations and disruptions will most **likely** be felt first at the most personal levels; among family and close friends. The next **level** of **disruptive** behavior may be at the community level through actions against property and, potentially, against **non-Inupiat**.

Because of its proximity, Kaktovik will be most affected by Camden-Canning activities. The deterioration of social health caused by conflicts and tensions arising from the cumulative impacts on the **sociocultural** system that have been described for the Camden-Canning scenario may stimulate an increase in alcohol and drug abuse, **intrafamily** violence, and other **crime** categories.

#### FAMILY RELATIONSHIPS

Changes in the physical, economic, and social environment will also

manifest changes in family relationships. Rapid changes in these spheres have generally been shown to have impacts on the sociocultural system that are extremely damaging in both the short and long term. Worl Associates (1978) noted that the survival of the Inupiat sociocultural system is related to maintenance of family organization. The extended family which characterizes Inupiat family forms is complex in membership. Domestic family units generally occupy a single dwelling and are comprised of grandparents, parents, and children or two or more siblings, their spouses, and children.

Alaska Consultants, Inc. (1978) noted that 110 new homes will be needed in Barrow and several additional houses in each of the other communities in the case of the Camden-Canning OCS scenario. An expanded economy and employment and the Borough's increased revenues anticipated during the case of the Camden-Canning scenario will in all probability support this new construction. An increased number of available housing units and the movement of extended family units into two or more houses will result in fragmentation of extended family living arrangements. Family residential patterns will begin to approach the nuclear family residential pattern characteristic of Westernized families. While new living conditions may promote improved health, family relations may be weakened if the movement of an extended family into two-or more units is accompanied by decreased subsistence. Subsistence is one of the bonds that integrates family units through cooperative and sharing mechanisms. While it can be argued that these effects are only indirectly related to Camden-Canning development, they nevertheless would not exist to the

present and projected extent without oil and gas development.

Related to increased financial obligations demanded by more modern housing is the need for employment, or, conversely, employment affords the opportunity to purchase new homes which results in rising costs. Employment impacts on family relations are thus related to impacts of new housing. While money has been viewed as a resource to be shared throughout the extended family, particularly evident in the subsistence sphere, increasing financial obligations may conceivably serve to place pressure or decrease the practice of contributing money to subsistence enterprises.

As noted previously, the Camden-Canning OCS scenario will stimulate expanded employment throughout the villages. Employment within the local villages should decrease the need for outmigration, which should serve to maintain family relations that might otherwise be weakened if family members left the community,

Family relations may be strengthened in Kaktovik if family members who left Kaktovik return to participate in Camden-Canning employment opportunities. Another conceivable ramification of this change would be the strengthening of ties between Alaska and Canada Inuit. Kaktovik families have relatives living in Canadian communities near the Alaska-Canada border who might return or migrate to Kaktovik. Other Canadian Inuit may also attempt to move to Kaktovik for employment purposes,

Decreased subsistence activities can also strain family relations. As noted, reduced subsistence activities is a possible consequence of an adversely impacted wildlife base resulting from Camden-Canning activities. Decreased subsistence weakens cooperative actions related to hunting and sharing patterns which serve to promote family bonds.

The cumulative effect of the impacts on the family, together with all the other potential changes described throughout this chapter, pose the potential for increase in family violence, child abuse, divorce, and ultimate denigration of the central role played by the family unit. Deterioration of family relations poses grave ramifications for the maintenance of the Inupiat society as distinct and unique form from Westernized and urbanized communities. The Inupiat extended family is the basic social unit through which traditional cultural and economic activities are conducted.

### Prudhoe Bay-Large Scenario

#### SUBSISTENCE

##### Population

Within traditional communities the indigenous and non-Inupiat populations impacts on subsistence anticipated in a Prudhoe Bay-Large OCS scenario will approximate those described for the Camden-Canning scenario with the exception of Nuiqsut and Kaktovik. Because of the proximity of

**Nuiqsut** to **Prudhoe Bay**, its population **is** expected to increase **at** a faster rate than other villages, and **Kaktovik's** projected growth during this scenario **will** be less than that forecast for the Camden-Canning scenario. The increased population in **Nuiqsut** will result **in** greater pressure on its-traditional resource base. Likewise the pressure on **Kaktovik's** subsistence base **during** this scenario will be decreased from the Camden-Canning scenario.

The impacts on subsistence derived from a large enclave population at **Prudhoe Bay** will be less than those described for the Camden-Canning scenario since the existing Prudhoe Bay infrastructure will be used. However the presence, activities, and movement of an additional 460 people over that expected for the peak manpower in the Camden-Canning scenario **will** result in greater wildlife disturbance, especially if recreational **activities** include observing wildlife in the surrounding areas. Impacts on caribou from **this** population **will** be reduced from that noted for the Camden-Canning scenario since as Dames and Moore (1978) noted, calving activity has already shifted from the **Prudhoe Bay** oil fields.

#### Employment/Economy

**Prudhoe Bay-Large scenario** employment/economy impacts on subsistence will correspond **to** those detailed for the Camden-Canning scenario with the exception of **Nuiqsut** and **Kaktovik**. Employment at **Nuiqsut** can be expected **to** be greater in this case than that described for Camden-Canning,

Kaktovik's employment will be less during this case than that expected during the Camden-Canning scenario.

### Housing

Housing impacts on subsistence during this scenario are similar to those described for the Camden-Canning scenario, with slight appreciable differences for both Nuiqsut and Kaktovik. Housing impacts can be expected to be slightly greater in Nuiqsut and less in Kaktovik.

### Natural Physical Environment

#### Water and Waste

The environmental consequences and their potential impact on subsistence, specifically fishing activities, are similar for both Prudhoe-Large and Prudhoe-Small. Since the Prudhoe Bay Deadhorse complex will serve as the staging area, additional water and waste areas are not anticipated. Dames and Moore (1978) noted that waste disposal from drill cuttings and drill mud could potentially impact water quality which would adversely affect the marine resources and that water withdrawal near the mouth of the Sagavanirktok River will impact fish populations.

#### Sand and Gravel Extraction

Gravel mining near the mouth of the Sagavanirktok River will further

**affect** fish populations that have already been impacted by previous gravel extraction activities." Marine and air traffic associated with gravel extraction and exploration and offshore production activities will result in periodic harassment of birds or mammals, according to Dames and Moore (1978). Adverse impacts on marine mammals, fish, migratory fowl, and caribou populations that result in decreased availability to the **Inupiat**, either through a reduced wildlife resource base or governmental regulatory actions, would seriously affect **the sociocultural** systems. The ramifications correspond to those described for the Camden-Canning scenario.

#### CULTURAL

The potential impacts on the cultural system and its effect throughout the **sociocultural** systems parallel those elaborated in the Camden-Canning scenario.

#### POLITICAL

The potential impacts on **political** systems and its effect on the **socio-**cultural system correspond to those described for the Camden-Canning scenario.

#### INTERETHNIC RELATIONSHIPS

With the exception of Kaktovik and **Nuiqsut**, **interethnic** relationships

in **Prudhoe-Large** will correspond **to** those described **for** the Camden-Canning scenario.

**Kaktovik** will **not** experience direct contact with **an** enclave population such as that anticipated for the Camden-Canning **scenario**. Therefore, impacts resulting from direct **interethnic** contact and resultant consequences described for the Camden-Canning scenario **will not** occur.

It is expected that **Nuiqsut** will experience **interethnic** contact and relationships that **correspond** to **the Kaktovik interethnic** relations in the Camden-Canning scenario. However, **Nuiqsut** residents have **had** previous contact with the **Prudhoe Bay Deadhorse** complex which should **provide** them with a basis **of** experience in dealing with the **Prudhoe-Large** scenario. On the other hand, their past experiences and relationships **may pre-**  
**termine their** attitudes and responses to further development at **Prudhoe** Bay.

#### SOCIAL HEALTH

The **Prudhoe** Bay-Large will impact social health and influence the **socio-** cultural system in the same manner as that described for the Camden-Canning scenario. Social health impacts may be more immediately evident in **Nuiqsut**, which is expected to be greater because of its **proximity** to **Prudhoe** Bay.



## FAMILY RELATIONSHIPS

The quantitative differences between this scenario and Camden-Canning will not appreciably **alter** qualitative impacts on **family** relationships from those described for the Camden-Canning scenario.

### Prudhoe Bay-Small Scenario

## SUBSISTENCE

### Population

The **Prudhoe** Bay-Small scenario, as the name suggests, is anticipated to be on a smaller scale than **Prudhoe** Bay-Large. The three population categories, **Inupiat, non-Inupiat** in the traditional communities, and the enclave population increases are expected to be smaller. Consequently, the impacts on subsistence decrease correspondingly in all areas. Population impacts on subsistence, as described as occurring in the Camden-Canning scenario, are similar except on a reduced scale.

### Employment/Economy

**Prudhoe** Bay-Small scenario impacts are smaller than those expected in the **Prudhoe Bay-Large** and the Camden-Canning scenario. The range of impacts and their effects throughout the **sociocultural** realm are similar to those identified in the Camden-Canning scenario but on a reduced scale.

## Housing

The degree of employment impacts **will** correspond to the **degree of** housing impacts for the Prudhoe Bay-Small scenario. Housing impacts **are** similar to those described for the Camden-Canning scenario except on a more limited scale.

## Natural Physical Environment

Since the location of the field involves the same region as **Prudhoe** Bay-Large but on a smaller **scale, potential** environmental impacts from water and waste and sand and gravel extraction are similar to **those** noted for the **Prudhoe** Bay-Large scenario. **Sociocultural** consequences correspond in all areas with that described for the Camden-Canning scenario except for the intensity of impacts. Potential transportation impacts on **wild-life** populations should be on a decreased scale as those during the **Prudhoe** Bay-Large scenario.

## CULTURAL

The potential cultural impacts and their effects throughout the **socio-**cultural system are less than those expected for the Prudhoe Bay-Large scenario and are similar to those described for the Camden-Canning scenario except to a lesser degree,

## POLITICAL

The potential political impacts and their effects throughout the **socio-cultural** system are less than those expected for the **Prudhoe Bay-Large** scenario and are similar to those described for the Camden-Canning scenario except **on** a less extensive scale.

## INTERETHNIC RELATIONSHIPS

With the exception of **Kaktovik** and **Nuiqsut**, **interethnic** relationships can be expected to pattern themselves after those described in the **Camden-Canning** scenario but of less intensity. Intensity will be lower for **Kaktovik** since they **will** not have direct contact with an enclave population, but **interethnic** contact will be greater for **Nuiqsut** which is closer to Prudhoe Bay, and **interethnic** contact will be intensified.

## SOCIAL HEALTH

Social health impacts with similar manifestations through **the sociocultural system** as those described as occurring in the Camden-Canning scenario will characterize the Prudhoe Bay-Small scenario but at a reduced level. Social health impacts may be more immediately evident in **Nuiqsut** and less intense for **Kaktovik** in this scenario than was noted **for** the Camden-Canning scenario.

## FAMILY Relationship

Family relations are expected **to be** under less strain during the **Prudhoe Bay-Small** scenario than that described for the **Camden-Canning** scenario. Impacts will be **of** the same nature but less intense.

### Cape Halkett Scenario

## SUBSISTENCE

### Population

In terms of overall population impacts related to **subsistence**, the Cape Halkett scenario offers the least impacts of **all** scenarios. **The smaller** scale of Cape **Halkett** development and the later startup date **of** activities from other scenarios will result in a reduced population impact. However, population impacts like those described for **the Camden-Canning** scenario are expected to occur but on a reduced scale. Because of **the** proximity of **Nuiqsut** to the Cape Halkett scenario, it will be the community most affected. However, the level of the population impact anticipated for **Nuiqsut** will be equal to that expected during the **Camden-Canning** scenario. The nature of population impacts will be the same as those described in the **Camden-Canning** scenario.

### Employment/Economy

Employment/economy impacts associated **with** the Cape Halkett scenario are

narrower than those anticipated during the Camden-Canning scenario with the exception of Nuiqsut. Because of its proximity, employment may be equal to and perhaps even greater than that expected in the Camden-Canning scenario. The sociocultural manifestation resulting from potential employment impacts correspond to those described for the Camden-Canning scenario.

### Housing

Cape Halkett scenario housing impacts related to subsistence will generally be lower than the Camden-Canning scenario; however, the sociocultural influences will be similar to those described for the Camden-Canning scenario and sociocultural influences will be similar to those described in the Camden-Canning scenario. Nuiqsut housing impacts will be on the same scale as those of the Camden-Canning scenario.

### Natural Physical Environment

#### Water and Waste

Dames and Moore (1978) stated that if too much water is withdrawn from the Colville River delta, major waterfowl nesting areas and fish overwintering sites could be adversely impacted. They also cited a potential direct impact on Nuiqsut's water resource if an onshore pipeline is built from Cape Halkett to Prudhoe Bay. The pipeline work pad and haul road will alter local drainage patterns and may affect the water quality at stream crossing sites.

## Sand and Gravel Extraction

Although sand and gravel requirements are significantly less than Prudhoe Bay and Camden-Canning scenarios, greater potential impacts from on-shore and offshore gravel mining west of Cape Halkett exist. Dames and Moore (1978) cited a greater chance for encounter with whales in this area than Prudhoe Bay and Camden-Canning areas. Smith Bay is a critical summer habitat for bowhead whales, beluga whales, and ringed seals, which could be seriously disturbed by the marine traffic associated with dredging and island construction.

Gravel extraction from Teshekpuk Lake could involve significant impacts to the lake's fish resources, waterfowl, and a small resident caribou herd, according to Dames and Moore (1978). The use of above-ground pipelines from Cape Halkett to Prudhoe Bay could also seriously influence the distribution of both the Teshekpuk and Central Arctic Caribou Herds.

The large number of molting waterfowl west of the Colville River are particularly vulnerable to the hazards of fuel spills or harassment by motorized vehicles. Excessive human activity or petrochemical pollution could displace marine mammals.

Although the Cape Halkett scenario is smaller in scale than the other OCS scenarios, the potential environmental impacts are the most significant and pose greater impacts on the subsistence complex. Sociocultural impacts correspond to those delineated for the Camden-Canning scenario,

## CULTURAL

The potential impacts on the cultural system are greater because of the significant environmental dangers associated with the Cape **Halkett** OCS scenario development activities. The nature of the cultural impacts and its manifestations throughout the **sociocultural** system are the same as those described for the Camden-Canning scenario.

## POLITICAL

The political impacts and effects on the **sociocultural** system correspond to those described for the Camden-Canning scenario. The impacts may be more intense because-of the potential adverse environmental consequences involving subsistence resources that are especially critical to the **sociocultural** systems.

## INTERETHNIC RELATIONSHIPS

Potential for negative environmental and subsistence impacts is highest in this scenario. Therefore, it will have the most volatile potential impact upon **interethnic** feelings and relationships. Development in the Cape **Halkett** scenario could maximize direct confrontation between subsistence hunting and fishing of the **Inupiat** and the OCS activities of the **non-Inupiat**. This area is of such extreme importance for marine mammals, including whales, that the mere presence of large-scale activities will likely cause strong reaction by **Inupiat**. Proximity to Barrow

and potential local hire on a large scale could partially mitigate against problems in **interethnic** relations **but** this is doubtful at this time.

**While** the proximity of Cape **Halkett** to **Nuiqsut** may offer increased employment opportunities for residents, fear of the potential impacts of **OCS** development on fish, caribou, **and marine** mammals may well decrease **the** desirability of working in the Cape **Halkett OCS** scenario. The potential environmental impacts will also create concern about the presence of **non-Inupiat** on the North Slope, potentially **raising** fears of losing **control** of the area's resources to **outside control**. Decreased subsistence opportunities are of particular concern to the residents of **Nuiqsut**, **all** of whom recently migrated from Barrow to continue a **more** traditional way of life, as they are heavily dependent upon subsistence activity. The **socio-cultural** ramifications correspond to those described for Camden-Canning **interethnic** relationships.

#### SOCIAL HEALTH

Because of extreme potential impacts on subsistence resources, Cape Halkett OCS development poses serious problems for the social health of the **Inupiat**. Causal factors and effects are similar to those described for the Camden-Canning scenario.



## OCS Summary of Impacts

The environmental consequences of **OCS** development throughout the four scenarios remain the critical factor potentially impinging on the traditional **sociocultural** system of the Beaufort Sea Region. As noted, adverse environmental damage to the habitat and wildlife population could have serious repercussions on the subsistence life-style of the residents. **OCS** impacts adjacent to and within the marine environment could have grave consequences on marine mammal populations which are important resources for coastal communities.

Since major population growth is expected to be centered in the enclave sites, the population within the **OCS** enclave is not anticipated to directly interact with the **Inupiat** population. However, competition for resources with increased sport hunting and fishing activities by the **OCS** populations could also affect the **sociocultural** stability. Native people in Alaska have long contended that state regulations traditionally give priority to sport hunters over subsistence users.

Direct contact does not need to occur between the **Inupiat** population and the enclave population to stimulate an **impact** on the **sociocultural** system. Activities within the enclave centers can affect the **Inupiat** population, e.g., subsistence impacts as outlined above. Lack of employment opportunities for the **Inupiat** within **OCS** developments could cause tensions in **interethnic** relationships. Although the **Inupiat** may elect not to participate extensively in **OCS** employment, tensions would result if

it were **perceived** that **OCS** employment opportunities were not **available** to them. Any adverse impacts caused by **OCS** developments that would directly **affect** the **Inupiat** could strain **interethnic** relationships in all **local** communities.

An assumed result of **OCS** development **is** its secondary and indirect **im-** pact on **the Beaufort** Sea population through the revenues it generates for the North Slope Borough. As noted, the **sociocultural** systems will potentially be impacted by North Slope Borough employment **opportunities** for its residents and borough activities supported through **OCS** revenues.

The overall impacts of **OCS** developments must be assessed in terms of **their** Immediate and long-range effects of **OCS** impacts. Additionally, it must be emphasized that the **OCS** scenarios will be impacting a **socio-** cultural system that is currently being taxed by a multitude **of** forces of change, as outlined in the **non-OCS** scenario. Because of the current' pressures of change, the **OCS** impacts are greater and more intense than had they impacted a **sociocultural** system that was not currently experi- encing intense change. The **cumulative** effects of the **OCS** scenarios and the **non-OCS** developments must **be** considered in an assessment **to** project the impacts on the **sociocultural** system. **Rapid, intense, and adverse** impacts with **OCS** developments coupled with current pressures for change could strain the **sociocultural** systems beyond its threshold **to** maintain its cultural viability,

Short-term impacts associated **with OCS**, the influx **of workers**, machines,

and equipment, are distinct from long-range impacts. Negative impacts on **the** environment and **wildlife** population will continue **to** adversely affect the subsistence life-style long after the year 2000. Social problems associated with rapid **industrial** expansion have been well **docu-**mented to remain long after the development period has declined.

Although industrial developments associated with the OCS scenarios will be stationed in enclave sites, adverse environmental and wildlife impacts have the potential for affecting all northern communities' **sociocultural** systems. Since caribou, waterfowl, and marine mammals are migratory, local impacts on habitat and wildlife resources associated with an **OCS** scenario could threaten subsistence activities of all the communities which depend on migratory animals. Adverse impacts, particularly during critical reproductive periods, would also have long-term effects on wildlife populations and subsistence activities. It is also assumed, however, that proximity of the industrial enclave will exert immediate and greater influences on the **communities** closest to the development site.



## REFERENCES

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