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Indians, The Energy Research and Development Administration: A Look at Common Interests and Concerns.

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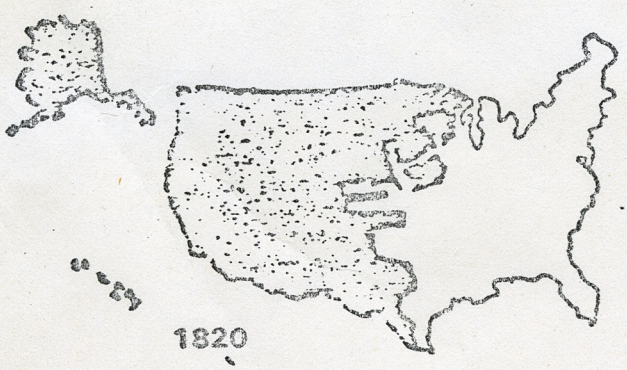
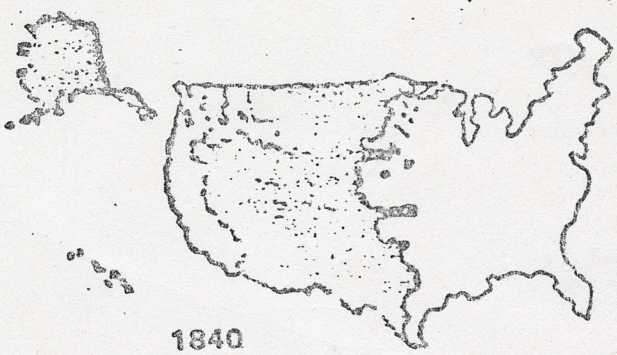
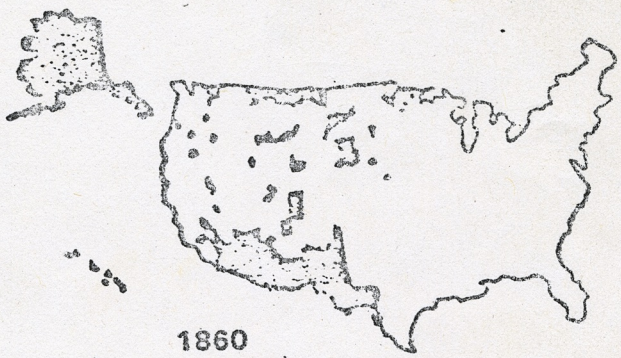
INDIANS
&
THE ENERGY RESEARCH
&
DEVELOPMENT ADMINISTRATION

OCT 1977

"A look at common interests and concerns"







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"After the preparation of this document, The Energy Research and Development Administration was absorbed by the new Department of Energy. Presumably the programs described in Section X will continue to exist.

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I. PURPOSE

I. PURPOSE:

The purpose of this paper is to describe the scope of Indian owned energy resources, their effect on the national energy supply and the relationship that should exist between Indian nations and the Energy Research and Developement Administration. There are areas of mutual interest as the tribes strive toward self-sufficiency and the Energy Research and Development Administration strives toward its goals of fulfilling the nation's energy needs and fulfilling its share of the Federal trust responsibility to Indian nations. The trust responsibility includes the duty to see that Indian rights are protected and Indian owned resources are protected and developed in a way that is in the best interests of the beneficiaries of the trust, both culturally and economically.

Further we have designed it to be a tool for the tribes to use in understanding ERDA programs and how they might be used to the benefit of the tribes.

II. STATEMENT OF PRINCIPLES

II. STATEMENT OF PRINCIPLES:

1. Approximately two-hundred Indian nations are the private owners, potential producers, consumers, and governmental entities exercising control over substantial amounts of natural resources in this country. There is no parallel to this circumstance in the American experience. Indian nations can be compared to foreign developing nations. Foreign developing nations are seeking to control their own destinies without colonial domination; so are Indian nations.

2. The Federal government as a whole, through treaties and other law upheld by court decisions, has a trust responsibility to Indian nations and Indian people to protect both their rights and resources in the best interest of the recipients of the trust. In terms of fiduciary trust alone, the federal government has the same responsibility to insure that the assets of the trust are both protected and used to the maximum benefit of the trust recipient as the trust department of a bank has to an individual.

3. There is a growing determination by Indian nations to exercise their powers as governments and to exercise their control of their own destinies, including the control of the development of their own resources, and calling their trustee to account for past performance of the trust responsibility.

4. The Energy Research and Development Administration will become part of the new Department of Energy. As federal entities, both the Department and ERDA have an unquestionable trust responsibility to protect and enhance Indian rights and resources.

5. Both the legislative and executive branches have avowed self-determination by Indian nations as the Federal policy.

III. OVERVIEW OF TRIBES OWNING ENERGY RESOURCES

III. OVERVIEW OF TRIBES OWNING ENERGY RESOURCES:

It is impossible to say with certainty how much of the nation's energy resources are owned by Indian nations because there are no comprehensive inventories available to the tribes, and we must assume, therefore, to their trustee, the Federal government. It would be inconceivable to assume that the Federal government had acted on behalf of the tribes without information not made available to the trust recipients. It may be difficult for non-Indians to believe that the trustee has acted on behalf of the tribes without comprehensive inventories based on the technology of the day and updated with the state of the art. Nevertheless, it is true. Only with the advent of the energy crisis, and the resultant national emphasis on development of domestic energy, the recognition of the potential of Indian owned energy resources and the organization of the Council of Energy Resource Tribes (an inter-tribal compact of those tribes with known energy resources) were efforts begun to inventory tribally owned resources.

The first recommendation of the Council of Energy Resource Tribes made to the Federal Energy Administration was that those tribes be supplied with the fiscal resources to accomplish comprehensive inventories upon which they might base properly informed development decisions. The tribes made it clear from the beginning that those decisions included the option not to develop if it was not in the best interests of their people either culturally or economically.

Apparently embarrassment by the new Federal Energy Administration's recognition of the problem, and pressure from the tribes caused the Bureau of Indian Affairs to begin its own program to develop the inventories. According to the BIA's schedule, these inventories will be completed in 1995, about fifty years too late since many of the existing leases were made in the early fifties.

The amounts of resources owned by individual tribes have not been included in this report for two reasons: (1) as stated before, comprehensive inventories are not available, and (2) if they were, they would be proprietary information for the tribe's and the trustee's (on behalf of the tribe) use only. As such, they would not be published by Americans for Indian Opportunity even if we had them.

Nevertheless, based on information available to the general public from various Bureau of Indian Affairs, U.S. Geological Survey, Department of Commerce and other public

and government reports, the following general data is available:

a. Coal: Tribes own at least 33% of the western low sulphur coal.[1]

b. Uranium: In 1976, 25% of U.S. uranium production and 11% of world uranium production came from reservation lands. Reserve estimates range from 13-36%.[2]

c. Geothermal: No figures available.

d. Oil and Gas: 3% of U.S. oil reserves lie on Indian lands.

e. Oil Shale: No figures available.

f. Timber: Indian nations own a sizable portion of the timber in the United States, which may be a major replenishable energy resource as technology is developed.

g. Solar: The ownership of solar resources cannot be assessed at this time. However, the number of tribes in the sunny southwest makes it clear that when and if technology is developed, for storage and transmission to other points, reservations could well be key collection points for solar energy.

h. Tidal: There are tribes on both the east and west coast who could participate in tidal energy development. One eastern tribe, the Passamaquoddy, are currently negotiating an experimental tidal energy project.

These figures are based generally on known reserves and do not take into account the resources of Alaskan natives because certain issues involving which lands are to be under native control have not yet been settled.

Attached as Appendix A to the Summary is a map showing the location of tribes indicates those known to own non-replensihable energy resources.

Attached as Appendix B is a table showing Indian nations with energy resources under production, known and potential reserves.

The ownership of water, crucial to the development of virtually all non-replenishable resources, will no doubt be the most controversial issue in energy development. We will not attempt to define or quantify water rights in this paper as there are cases presently under litigation and many more which, no doubt, will come under litigation. By looking at a map showing the location of tribes on the major tributaries, it seems safe to say that Indian nations have legal claim to most of the water in the western United States.

IV. HISTORICAL OVERVIEW OF U.S. - INDIAN RELATIONS AND INDIAN ECONOMIC DEVELOPMENT

IV. HISTORICAL OVERVIEW OF U.S. - INDIAN RELATIONS AND INDIAN ECONOMIC DEVELOPMENT:

Pre-Columbian: Before the White Man Came

Indians had economic and trade systems before the advent of the White Man. Tribes were economically self-sufficient. They were able to secure food, clothing, housing - "the necessities of life" and they were also able to pursue "the fine things in life" - art, music, literature and religion. Their political-economic systems were characterized as egalatarian and the democratic political systems of the Iroquois Nation served as a model for the founding fathers of the United States in constructing the American form of government.

The vast and rich land in which Indian people lived provided adequate economic subsistence with tribes adapting their political-economic systems according to the conditions demanded of their environment. Economic systems ranged from the complex irrigation systems of the Pueblos, to fishing in the Northwest to buffalo hunting on the Plains. Many tribes found the quality of life they desired as nomads moving from area to area as needs dictated. Frequently, areas occupied by one tribe were shared by others. The idea of exclusive property control was not as rigorously held by Indian tribes as it was and is by other peoples.

There were battles and raids between tribes, of course. Information passed down from the Old People indicates that these, too, had to do with economic systems - there was often a shortage of marriageable women, that is, women not closely related. Polygamy no doubt contributed to the shortage, as well. Raids to steal brides or to take slaves were common among some nations. Some battles were more like sporting events to establish young men's honor - killing an enemy was less honorable than striking an enemy, scoring coups - a lot like our football games today, only less brutal.

The arrival of Europeans and their need and desire for land created a radical change in the Indian way of life and means of subsistence.

The history of the interaction between the newly arrived Europeans and the Native Americans can be summarized as the gradual takeover of Indian lands and the removal of Indian people to less desirable areas. Later, as greater areas became settled and less land was available, remaining areas reserved for the native peoples were further eroded through

Congressional actions, and of that which remained, substantial areas were leased to non-Indians.

The initial dealing with tribes during the colonial period of the United States was based on the practice of treating Indian tribes as sovereign political communities or nations. Relations with Indian tribes were considered to be international; relations between the European nations and Indian tribes were to be handled only by central governments.[1]

The economic relationship between colonial governments and tribes was based on the desire of the colonial governments to acquire land and the need for hides and furs which the Indians were well able to provide. The tribes accommodated their hunting practices and patterns of residence to the demands of the fur trade and soon found themselves dependent upon European tools and fabrics.

Following the War of Independence, the United States, finding the military strength of Indian tribes so great as to make conquest an unworkable policy, pursued a policy of trade with and civilization of the Indians. The first important law spelling out Federal Indian Policy was the Northwest Ordinance of 1787 which stated: "The utmost good faith shall always be observed toward the Indians; their land and property shall never be taken from them without their consent; and their property, rights, and liberty, they shall never be invaded or disturbed, unless in just and lawful wars authorized by Congress; but laws founded in justice and humanity shall from time to time be made, for preventing wrongs being done to them, and for preserving peace and friendship with them."[2]

The basis for future law was set in 1789 in the U.S. Constitution, which conveyed to the Federal Government the power to regulate commerce with the Indian tribes, to make treaties with them, and to control and protect Indian lands from outside interference. The Constitution recognized the fundamental right and legality of the Indian's desire for a permanent separate identity as a people.[3]

Although American statesmen acknowledged the political autonomy of the tribes, they possessed a conviction that the natives were culturally inferior which led them to interfere in their social, religious, and economic practices. They attempted to "civilize" them. In political terms, the policy of "civilizing" the Indians reflected not only the demands of an expanding white population, but a change in the political and economic needs of the U.S. from the benefits of

the fur trade to the need for agricultural land. They hoped that by civilizing the natives they could assimilate them into the general population, opening up their lands to homesteaders. This policy, however, did not work. Tribes were not taken in by this logic and saw no reason to give up their way of life.

In reaction to the Cherokee Nation's refusal to submit to gentle persuasion, harsher methods were taken up. Under Andrew Jackson's administration, the Indian Removal Act was passed in 1830. The act reflected a realization on the part of the Federal Government that tribes no longer had the military strength to protect their lands and sovereignty from American Power. A necessary consequence of such a realization was that the United States could come in and take Indian land with impurity. The Removal Act provided for the forced exchange of Indian lands in the East for lands in the areas of Oklahoma, Kansas, Nebraska, and Wisconsin, placing the Indian nations outside the boundaries of organized states and territories, and thrusting them into the economic and political territories of the tribes already living in those areas (naturally leading to conflicts). The Act allowed the Federal Government to make treaties with tribes for the exchange of such lands. If a tribe refused, which happened on many occasions, they would end up overrun by settlers and state militias, with no remaining land base.[4]

It was argued by Jackson that such removal would protect the tribes from intruding settlers (by treaty, the responsibility of the Federal government) and would allow them self-govenment in less settled areas. However, the process of removal itself under-mined the social and political structures of the tribe. Many chiefs who signed removal treaties so discredited themselves that they had to sever relationships with their tribes.[5] Bitter fractionalization resulted and the legitimacy of public authority was eroded. The actual immigration took a grim toll of life and health among the involuntary emigrees.[6] Removal from traditional areas resulted in radical changes in the ways of life for both the emigrees and the tribes already living in those areas. The people's way of subsistence was completely disrupted forcing most into survival-oriented lifestyles.

Within 15 years of the Indian Removal Act the Eastern tribes which presumably had been removed to permanent homes were divested of their newly acquired lands to accomodate settlements along the transcontinental railway.[7] The dramatic acceleration in the pace of settlement and territorial exploitation that resulted from the discovery of gold, the development of railroads and search for farmlands, required that the

tribes be brought under Federal control. Other Western tribes had little experience with treaty negotiation and little contact with Anglo-Americans. Most showed little interest in accomodating their own cultural patterns and their ways of life to the encroaching settlers. Two decades of warfare reduced their defensive strength and forced them onto reservations whose resources could not sustain their traditional mode of life.[8]

When the Department of Interior was organized in 1849, control of Indian Affairs was shifted from the War Department to the new department. The transfer reflected the congressional hope that the nature of Federal-Indian relations would change from one of war to one of peace so that the Indians could assume a character consonant with the relationship of a ward to his guardian.[9] The shift resulted in no decrease in warfare against Indians: More nearly the reverse. A more vicious and unyielding campaign was waged by the military to force tribes onto reservation lands. Between 1853 and 1856 alone, 52 gunpoint treaties were signed and an additional 179,000,000 acres of land was acquired from the tribes.[10] For complex reason in 1871, Congress abolished the treaty system and changed the method of dealing with tribes to what became known as "agreements.[11] By this time the land on which Native Americans subsided had been reduced from lush areas of 2 billion acres to a largely sub-marginal 150 million acre area, and the people had no skills, capital, or technology with which to deal with the abrupt changes in their economic base.[12]

In the 19th century, confinement to a reservation was, in reality, confinement to concentration camps where an Indian agent, backed by the military, managed the people and land with absolute authority. As a result, traditional governments and systems of authority were radically altered. The purpose of the reservation was to isolate the Indians from the surrounding areas and to protect the fast-growing white populations of the western states and territories.

As all traditional economic activity was altered, and no alternatives were availabe, many tribes lived for decades in a state of dire poverty often depending on rations from the Federal Government. Wage labor was largely unavailable because of the isolation of the reservation. Those who could find jobs were few, and most of the remaining 155 million acres of Indian land was either leased or remained idle.[13]

The development of U.S. policy towards the tribes in the first century of independence reflected two variables: (1) changing market conditions that rendered direct control of

Indian lands and mineral resources more profitable than trade in goods Indians might extract or produce; and (2) the changing balance of military power as the United States gained in numbers and wealth while the Indian population decreased due to warfare, disease, and starvation.

By replacing land with cash payments for land forever lost, by making tribal governments dependent on uncertain and frequently inadequate congressional appropriations, by attacking traditional authorities and subverting native leaders who were not compliant, Federal agents deprived the tribes of the economic, cultural, and political resources necessary for building or sustaining viable independent communities. The agents, on the other hand, complained that their Indian wards had flunked the civilization test and failed to be self-supporting citizens. The Government then proceeded to elaborate a policy for dealing with Indians as dependent paupers. The direction of Federal policy turned to Indian assimilation into the dominant culture, in hope of getting what was left of the Indian land and resources.

The management and maintenance of Indian tribes was left to the Indian Service, which gained a well-earned reputation for inefficiency and corruption.[14] Means used by Indian agents to defraud Indians ranged from outright theft to shabby ventures just within the letter of the law. One clever agent in the Southwest developed mining enterprises using tribal funds, and succeeded in recruiting an Indian Office inspector and a son of the Commissioner of Indian Affairs in his promising, but illegal, business ventures.[15] Another stocked the ranches of his friends with cattle issued for tribal use.[16] Honest mismanagement occurred just as frequently with similarly damaging results. Indian farms were established where drought and locust invasions were frequent. Sawmills were established on reservations where the only timber was cottonwood or willow. Bakeries were set up at agencies, even though the patrons did not use or buy the product. In reaction to such blatant blundering and theft, an era of "reform" hit the American public.

This reform attitude hailed assimilation of Indian people into white culture as the answer to all problems. The first attempt at assimilating Indians was to separate Indian children from their parents and force them into the American culture through Government-operated boarding schools. It was believed that older Indians were beyond salvation, but the young could be forced to give up their language and culture.

This intervention into the parent-child relationship undermined the Indian family, which was already weakened by

the transistion from the older life-style to reservation existence. In time, Indian communities came to view education with great suspicion. Along with the policy of assimilation, Federal Indian Service administrators penalized tribal members for speaking in their native tongue or practicing their religion.[17]

Allotment

Hand in hand with a policy of assimilation through education and the undermining of Indian governments and religions by force came the policy of assimilating Indian people economically. This meant the destruction of communally-owned land systems and the introduction of the idea of individually owned property. This policy was implemented through the passage of the Dawes Act of 1887.

The Dawes Act specified that:

1. the President was authorized to divide tribal lands and assign or allot 160 acres to each family head.
2. each Indian was to choose his own allotment, but if he refused or failed to do so, a Government agent would make the selection.
3. title to the land was to be held in Federal trust for 25 years, or longer at the President's discretion.
4. at the end of the trust period, U.S. citizenship would be conferred upon all allottees and upon Indians who separated themselves from their tribe and took up "the habits of civilized life."
5. surplus land remaining after allotment might be sold to the United States.[18]

> The system of communal land systems had come to be seen as unnatural and was perceived as the cause of Indian poverty. Reformers felt that individual tribal members could become "unsuccessful" as individual farmers. More importantly the act opened up over half of the remaining lands of Indian people to white settlers.[19]

In reality, the actual intent of the act was not to help "civilize" the Indians, but rather to open the Indian lands to homesteaders. This intent is made clear by the following statement of the Commissioner of Indian Affairs to a group of Flathead Indian people who were opposed to allotment.

> "When Governor Stevens made his treaty with the Flathead, Kootenai, and Upper Bend D'Oreille Indians on July 16, 1855, conditions were altogether different from what they are today. The

land that was given to you was of small value and the settlers were few. Now, however, the people (non-Indian settlers) have increased in numbers, and they must have land in order to live and support their families."[20]

Although some well-intentioned but short-sighted people may have seen allotment as a way of dealing with Indian poverty, the act ended up meeting the desires of non-Indian settlers to find new lands more than anything else. From the initiation of allotment in 1871 to the termination of allotment policy in 1934, the Indian land base was reduced from 155,000,000 acres to 47,311,099 acres. Tribally controlled acreage was reduced from the full 155,000,000 acres in 1871 to 29,000,000 acres in 1931.[21]

Analyzing allotment from an economic perspective, it left the individual Indian allottee with no hope of success. First of all, most of the land allotted was not farm land and 160 acres of dry grazing land or desert will not support even one cow. It is doubtful that one can survive and support a family on 160 acres of even choice farmland, especially if one isn't provided with machinery, and capital to farm the land. Few allottees received this assistance. Allottment in effect broke up the reservation into small and inherently uneconomic units.[22]

Secondly, as time went, the small land acreages would end up divided among the children of the original owners and then the children of the children. This meant that within a 30 year period, up to 60 people could hold interest in a 160 acre tract.[23]

Thirdly, as the surplus lands were purchased by non-Indians, a "checkerboard" pattern of land holdings among Indian allottees and non-Indian homesteaders developed. This made it extremely difficult for tribal governments to govern and to provide services to their people in a manageable way. When groups of individual Indians or Indian tribal governments realized the economic unfeasibility of allotted units their attempt at consolidating lands became further frustrated by the checkerboard pattern.

As many Indians realized that there was little hope of success in farming or utilizing their 160 acre tracts, and and as other resisted efforts to be forced into allotments, Congress amended the Dawes Act to permit leasing of land not being farmed or grazed. Enterprising white farmers and ranchers took advantage of Indian allottees who were unaware

of the worth of their lands and negotiated leases at ridiculously low prices. This prompted another layer of bureaucratic control to regulate and oversee the Indian leasing procedure. The system of leasing became the predominant philosophy of economic development of the Bureau of Indian Affairs for the next 90 years.[24]

Reorganization

Of the results of the allottment policy, a Federal Commission organized to report on Indian policy (the Meriam Commission) observed: "It almost seems as if the government assumed that some magic in individual ownership of property would in itself prove an educational civilizing factor, but unfortunately this policy has for the most part operated in the opposite direction.[25]

As a result of the disintegration created by the allotment policy, military conquest, the suppression of culture and tradition, and racist denial of civil rights, incalculable dmamage had been done to the Indian people and tribal units. Tribes had been moved about like livestock until, in some cases, the original homeland was no more than a legend in the minds of old men and women. Children had been removed from the family, by force at times, and kept in close custody until they lost their mother tongue and all knowledge of who they were. Land losses were catastrophic, while the failure of the Government to provide economic tools and training for proper land use. The remaining land holdings of the tribes were left untenable or leased to white farmers at ridiculous rates. As a result, only 2% of the Indians had incomes over $500 a year.[26] Health care was non-existent, the death rate and infant mortality rate often was 50 to 100 times the national average.[27] Growing recognition of the dire conditions led to another national movement for reform. This resulted in the adoption of the Indian Reorganization Act of 1934. The Act was an admission of the failure of allotment and assimilation policies, and a recognition that Indian people must be treated as distinct and sovereign peoples. The provisions of the act:

-prohibited future allotment of Indian lands.

-restored back to tribal ownership the remaining surplus lands lost under allotment (except those sold, approximately 100 million acres).

-set aside funds for the acquisition of additional lands for tribes.

-provided for the reorganization and promotion of tribal governments so that tribes could manage their own affairs and provide services to their members.

-set up a revolving loan fund for the purpose of promoting economic development.

-provided for Indian preference for employment in the Indian service.

-advanced funds for vocational and professional education for Indian children.[28]

The Indian Reorganization Act was designed to restore some measure of the land base and self-government which tribes had enjoyed prior to the allotment and assimilation policies. Unfortunately, the Act was not coupled with any major changes in Bureau of Indian Affairs management of economic development nor did it address the basic questions of capital and technology; the basic needs for real development. Leasing remained the policy. Many Indian people began to find employment in urban centers. A pattern of commuting between the reservation and the city began to emerge.

Termination

While the Indian Reorganization Act and it's chief architect, BIA Commissioner John Collier (Commissioner 1931-1945), brought about some great improvements in Federal Indian policy, resistance to Indian self-determination began to come from Congress. Many constituents of Congress, and Congressmen themselves, disliked the idea that Indian tribes should be encouraged or supported with public funds in the development of a cultural system that they considered alien to the prevailing ideology of the United States. They were abhorred for their religious and cultural values, the communal ideas and practices, and their very disinclination toward the white way of life.[29] Following World War II, there was great competition for Western lands and non-Indians in those areas brought pressure on Congress to make Indian lands available to them. Others particularly in the Western States resented the restrictions on Indian resources and the powers of tribal governments over reservation areas. Assimilation, again was sought as means as solving these "problems". This time more drastic steps than allotment appeared necessary to achieve their goal. The solution became termination of Federal relations with Indian tribes as distinct groups accompanied by a host of federal programs designed to break-up reservation populations and scatter them across the United States.

One of the first steps taken in this direction was the Bureau of Indian Affair's Relocation Program. The program recruited young Indian people to leave the reservation promising them jobs and training in the cities. A relocation allowance was given for the year or less of training and then the relocatee was expected to assimilate into the cities and dissappear. Roadblocks were set up to make it difficult for relocatees to return home.[30] At the same time, no programs were set up to provide for economic development and joss on the reservation. The combination of the two "programs", termination and relocation, left many young Indian people with no alternatives but to relocate or starve.

After a series of studies were completed and accepted and an equal batch rejected, Congress held it's first termination proceedings. In 1953, during the 83rd Congress, House Concurrent Resolution 108 was introduced declaring the intention of Congress to terminate Federal supervision at the earliest possible time.[31] In 1954, the first tribe was terminated; the Alabama-Coshutta, a small tribe in Texas.[32] Congress began to make substantial reductions in funding for Indian administration at all levels and it began to design a specific policy of termination. Those tribes who possessed the greatest natural and monetary resources would be terminated first, e.g. the Menominee and the Klamath. Efforts would then be made to get all tribes to a point where they could be terminated within 10 years. Within the next decade a number of tribes were terminated including the Klamaths in Oregon, the Menominee's in Wisconsin and several bands of Paiutes in Utah.[33]

However, complications which slowed the termination policy began to set it. Many tribes frantically opposed any effort to terminate. Many tribal decision makers felt that it was happening too fast and they weren't prepared. Others argued that termination meant an end to Federal recognition and protection of their Indianness and were concerned that termination would have ended the protection of their natural resources, treaty rights and lands. Being a politically powerless group, their interest would have been consumed by entrepreneurs and state governments who coveted their land and resources.

However, other non-Indian policymakers began to realize that the process would be too fast, that more time should be spent in preparing tribes for this eventful happening. Senators and representatives looked at termination a second time and began to look at what it would cost to assume responsibility for Indians in their states. These complications slowed down the termination fervor and policy shifted from

an emphasis on immediate termination to a policy of preparation for eventful termination. Education became the main emphasis of Federal policy.[34]

Self-Determination

In 1961, it became obvious that the policy of termination was also a failure. Terminated tribes quickly sunk to the bottom by all economic standards. Indian people relocated in the cities did not disappear and ended up as the poorest of urban citizens. In 1961, Interior Secretary Udall's task force on Indian Affairs concluded that there should be a greater emphasis on the development of both human and natural resources on the reservation and a shift away from the discussion of tribal termination.[35]

In 1968, President Johnson called for an end to all termination programs and stressed the goal of self-determination. Also in 1968, Senator George McGovern introduced a resolution which replaced Resolution 108 and established self-determination as national policy.[36]

The most significant reason for the emergence of self-determination as the direction for Indian tribes and Federal policy was the actions of many Indian people and tribal decision-makers throughout the country. Growing alarm over the possible loss of Indian culture, civil rights, and treaty rights prompted unprecedented demonstrations in the mid 1960's, culminating in events such as the occupations of the Bureau of Indian Affairs, Alcatraz, and Wounded Knee.

More importantly, Indians were enrolling in colleges and universities in unprecedented numbers. They were concerned about giving the term Indian Self-Determination a real meaning. By the 1970's the Indian community possessed the skills of a large number of Indian lawyers, educators, and administrators who began to take their battle to the courts and Congress. There became available for the first time the opportunity for Indian tribes to run their own governments and businesses in the Indian way while using the technical skills of the white man.

Federal policy has become oriented towards the development of Indian governments and economies as distinctive entities. Funding for programs is less often funneled through Federal programs and Federal administrators and there has been more and more direct funding of Indian governments.

Legal sanction has been given to this principle of free choice and Indian control through the Indian Self-Determination Act which Congress passed in 1975. The Act deals with

a major objective of the Self-Determination policy; the transfer of power from the bureaucracy to the Indian community. The Act allows tribes to contract directly for administration and operation of all programs formerly managed by the Bureau of Indian Affairs, the first step towards moving the process of decision making directly into the hands of those who will be affected by the decisions.

Although Federal policy began to give tribal governments more control in the areas of government, education, and services, the economic development policies were still imposed on the tribes from the Bureau of Indian Affairs, Economic Development Administration, and other agencies. An example of the kind of thinking which has characterized those programs can be seen by looking at the following section from a major study on Indians and Federal policy called "Aids to Development". [37]

> "While many factors have retarded reservation development there are some that favor a reservation location. Among the advantages are the natural resources on the reservation and low labor costs.
>
> LOW LABOR COSTS: Because of the high level of unemployment on the reservations, prevailing wage rates for the few jobs available are low. A lower wage than now prevails on the reservation would probably encourage the location of additional industries there.
>
> LIMITED FRINGE BENEFITS: Labor costs in reservation plants are lower than in comparable plants located off the reservation not only because of hourly wage differentials, but also because most reservation factories have fewer fringe benefits than plants elsewhere. For instance, none of the fifteen firms visited had medical insurance plans and only one had a life insurance plan for its employees. The amount of paid vacation ranged from 3-7 days a year.
>
> LITTLE UNIONIZATION: Only one of the 15 plants visited was unionized."

Who receives the benefit of these lower labor costs? It is certainly not Indian workers or tribal governments. Hand in hand with the prevailing attempts to place Indians under the economic power of others, the Federal policymakers have concentrated on attracting non-Indian firms to the reservation.

An awareness is growing among tribal leaders that if Indian tribes are going to survive as cultural units there

must not only be tribal government operating to serve the immediate needs of their people, but also economic planning to guarantee the future of the tribes. As long as others control the development of their natural resources, they have little meaningful impact on the future viability of their communities. Tribes have begun building their own enterprise and capabilities so that the Indian people may control the development of their resources. Tribes have moved from simple leases to actual development projects, and have taken control of industries, located on reservations. It has been a long and difficult process, but the tribes have shown themselves capable and have managed their resources in a far more successful manner than the Federal Government has ever managed these resources for the tribes.

For example, the Ak-Chin and Colorado River Indian Tribes cancelled leases or allowed leases to expire and began farming their own land as tribal enterprises. CRIT Farms, Inc. now farms 4,300 acres and nets over $50,000 a year in addition to providing employment for several tribal members. The Blackfeet and Jicarillas have entered joint venture agreements for production of some of their oil production. The Navajos and Lagunas have renogotiated uranium contracts with far better terms than the originals.

Out of this new awareness the Council of Energy Resource Tribes was formed. Sitting on vast deposits of coal, uranium, oil shale, geothermal energy and oil, Indian nations have realized that they still own something which is valuable. However, this time, they want to be assured that they will be dealt with equitably and that Indian resources will be used to benefit Indians.

FOOTNOTES:

1. Felix Cohen, Handbook of Federal Indian Law, 1942, Albuquerque, University of New Mexico Press, p. 122.

2. The American Indian Policy Review Commission, Task Force One: Trust Responsibiliities, U.S. Government Printing Office, Washington, DC, 1976, p. 90.

3. Ibid, p. 81.

4. Ibid, p. 140.

5. Ibid, p. 140.

6. Billy K. Gover, "The Effect of the Dawes Allotment Act of 1887 on the Indian Tribes of Western Oklahoma," unpublished manuscript, May 1977, Princeton University, Princeton, NJ, p. 22.

7. S. Lyman Tyler, A History of Indian Policy, U.S. Department of Interior, Washington, DC, 1973, p. 86.

8. Henry E. Fritz, The Movement for Indian Assimilation 1860 - 1890, Philadelphia, 1963, p. 62.

9. Op. Cit. Cohen, p. 560.

10. Op. Cit. Tyler, p. 74.

11. Ibid. p. 84.

12. Op. Cit. Fritz, p. 65.

13. Op. Cit. Tyler, p. 187.

14. Lawrence S. Schmeckebier, The Office of Indian Affairs, John Hopkins University Press, Baltimore, 1927.

15. Ibid.

16. Ibid.

17. Ibid.

18. Wilcomb E. Washburn, Red Man's Land - White Man's Law, Charles Scribner's Sons, New York, 1971, p. 145.

19. D'Arcy McNickle and Harold E. Fey, Indians and Other Americans, Revised Edition, Harper and Row, New York, 1970, p. 264.

20. Ronald L. Trosper, "Recent Land Confiscation and American Indian Poverty: The Case of the Flathead Indian Reservation" University of Washington, ASUW Lecture Notes, Seattle, Washington, 1975, p. 20.

21. Op. Cit. Washburn, p. 145.

22. Op. Cit. Gover, p. 58.

23. Op. Cit. Task Force One, p. 145.

24. Op. Cit. Tyler, p. 187.

25. Op. Cit. McNickle and Fey, p. 96.

26. Op. Cit. Washburn, p. 79.

27. The American Indian Policy Review Commission, Task Force Six: Indian Health, U.S. Government Printing Office, Washington, DC, 1976.

28. John Collier, Indians of the Americas: The Long Hope Mentor Publishing, New York, 1947, p. 157.

29. Op. Cit. Tyler, p. 163.

30. Ibid. p. 153.

31. Ibid. p. 172.

32. Ibid. p. 173.

33. Ibid. p. 180.

34. The American Indian Policy Review Commission, Task Force Five: Indian Education, U.S. Government Printing Office Washington, DC, 1976.

35. Op. Cit. Tyler, p. 198.

36. Ibid. p. 200.

37. The Brookings Institute, Federal American Indian Policy, 1969, Washington, DC.

V. LEGAL STATUS

V. LEGAL STATUS:

The two words used most often and most accurately to describe the legal status of Indian nations in the context of their relationship to the United States government are "unique" and "special". Through treaties, legislation, executive orders, and court decisions, all three branches of the Federal Government have recognized that Indian law and policy is a field of its own without parallel. There are more laws, regulations, etc., pertaining to Indians than any other group of American citizens.

Yet, the legal status of tribes can be summed up in one sentence. Indian tribes are sovereign nations. They are governments. They have the authority to govern; that is, to exercise those powers necessary to maintain an orderly society.

Their legal status basically is derived from the fact that they were sovereign nations before the arrival of Europeans and were dealt with as nations; that is, treaties were made between governments, by the Europeans and, later, by the United States. Not all tribes, however, have treaties. Some reservations were created by Executive Order. Others were simply run over or ignored. Many tribes are still asserting claims against the Federal Government for return of land or reparations for land illegally taken, i.e. the Passamaquoddy, Penobscot, Catawba, etc. So far as we know now, none of those have significant fossil fuel resources. The Passamaquoddy have, however, initiated a tidal energy experiment with the support of the Energy Research and Development Administration.

For the purposes of this report, we are dealing with tribes who have been designated as "Federally recognized tribes", that is, tribes recognized as Indian nations either by treaty, executive order, or court decision.

Because Indian nations are nations within a nation, a unique situation, there has been a constant stream of litigation almost since the creation of the United States government.

According to the final report of the American Policy Review Commission:1

> The single most important court decision, which is still relied upon by courts, is Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832). This case resulted from the struggle

between the State of Georgia and the Cherokee Nation, whose lands became surrounded by the State of Georgia. In the late 1820's, Georgia passed a series of laws which effectively abolished the Cherokee government. One of the laws included a requirement that any non-Indian residing on Cherokee land must first obtain a permit from the Governor of Georgia. Two non-Indian missionaries resided on Cherokee land at the invitation of the tribe but without such a permit from the Governor. The Georgia courts convicted the missionaries of violating the State law, but the United States Supreme Court overturned that conviction.

Chief Justice John Marshall's opinion in Worcester v. Georgia struck down the Georgia State laws which purported to operate on Cherokee lands. Interpreting the treaties, the Constitution, and the Indian Trade and Intercourse Act, Chief Justice Marshall found that Indian tribes were "distinct, independent, political communities having territorial boundaries, within which their authority (of self-government) is exclusive***". Thus, the State laws could have no effect on Cherokee lands because the Cherokee Tribe was a separate sovereign government.

While the opinion in Worcester v. Georgia holds that Indian tribes are not subject to State law, later cases made it clear that Indian tribal sovereignty, or self-government, is subject to the superior legislative authority of Congress. To put it another way, Georgia could not regulate affairs on the Cherokee reservation, but the United States could. The doctrine of tribal sovereignty, as first set forth in Worcester v. Georgia, has been explained in its most classic form by Felix Cohen, then Assistant Solicitor, Department of the Interior, a writer who is still considered by the courts to be the leading authority on Federal Indian law:

The whole course of judicial decision on the nature of Indian tribal powers is

marked by adherence to three fundamental principles: (1) An Indian tribe posseses ***all the powers of any sovereign state. (2) Conquest renders the tribe subject to the legislative power of the United States and, in substance terminates the external powers of sovereignty of the tribe***but does not by itself affect the internal sovereignty of the tribe, i.e., its powers of local self-government. (3) These powers are subject to qualification by treaties and by express legislation of Congress, but, save as thus expressly qualified, full powers of internal sovereignty are vested in the Indian tribes and in their duly constituted organs of government.

The doctrine of tribal sovereignty, or self-government, remains the starting point for any current discussions concerning the powers of Indian tribes. An Indian tribe inherently possesses all powers held by a government. The tribe continues to hold these sovereign powers until they are expressly relinquished by the tribe, as in a treaty, or until they are expressly taken away by Congress.

VI. TRUST RELATIONSHIP

VI. TRUST RESPONSIBILITY

The trust relationship between the United States and Indian nations has been debated, debilitated, denounced, and defined over and over again since it was originally set forth by Chief Justice John Marshall in his opinion in Cherokee v. Georgia.

The American Indian Policy Review Commission, in its Final Report provides an excellent analysis:

> Cherokee Nation v. Georgia was handed down one year before the Worcester decision and also involved the Cherokee Nation's resisitance to Georgia's attempts to enforce State law on Cherokee lands. The Cherokee Nation filed an action in the United States Supreme Court, seeking to enjoin enforcement of the State statutues which effectively outlawed the Cherokee government and laws. The Supreme Court refused to accept the case because the tribe was not a "foreign state" within the meaning of Article III of the Constitution. As a result, the Court did not have jurisdiction over the case.
>
> Chief Justice Marshall, however, proceeded to discuss the legal status of Indian tribes and their relationship to the Federal Government. In doing so, he drew upon international law, colonial and United States treaties, Federal statutes, and the Constitution. The Chief Justice characterized the relationship between the two governments as "perhaps unlike that of any other two people in existence" and "marked by peculiar distinctions which exist nowhere else". Marshall agreed with the Cherokee Nation that it was a "state" in that it was "a distinct political society***capable of managing its own affairs and governing itself." But he found that the Cherokee Nation was not "foreign" because it was within the jurisdictional limits of the Untied States and because the treaties with the Cherokees acknowledged dependency upon the Untied States.
>
> Marshall concluded that Indian tribes, rather than being foreign states, "may, more correctly, perhaps, be denominated domestic dependent nations***." He then

invoked the trust relationship by concluding that the relationship of the tribes to the United States "resembles that of a ward to his guardian."

This duty has always been recognized by the courts and has been variously characterized as a "fiduciary" relationship, a "trust" responsibility, and a "guardian-ward" relationship.[1] Marshall's analysis that our law has no direct parallel to this trust relationship has been often emphasized by the United States Supreme Court, which has described the relationship between Congress and Indians as "solemn," "unique" or "special", and "moral."[2] The Court, in utilizing such unusually forceful language, has relied in large part upon political principles which have emerged throughout the history of Indian Affairs. Although Cherokee Nation v. Georgia involved a treaty, later decisions have found that the trust relationship is created not only by treaty but also by other methods of federal recognition such as statutes, agreements, and Executive orders.[3]

The trust relationship, like the Bill of Rights in the Constitution, cannot be defined with precision in all respects. It is an evolving, dynamic doctrine which has been expanded over the years as changing times have brought changing issues.[4] Nevertheless, the trust relationship is a mature doctrine about which several generalizations can fairly be made.

Indian trust title to land is one important manifestation of the trust relationship. Title to land in Indian country is held by the United States in trust for the tribe. Trust land is not subject to taxation, and individual Indians on trust land are free of State taxes.[5] Trust lands, and their resources, must be managed for the sole benefit of the tribe so that they will be preserved.[6] In some instances, land is held in trust by the United States for individual Indians.[7] Some tribal funds are also held in trust and, in some cases, funds are held in trust for individual Indians.

Land held in trust for Indian tribes or individuals must be carefully distinguished from the so-called "public lands," such as those administered by the National Park Service, the Bureau of Land Management, and the Forest Service. Public lands are administered for the public-at-large. Different rules often apply for Indian trust lands which are held, and administered solely for, the affected Indians.[8] The scope of the trust responsibility extends beyond specific real or personal property which is held in trust. The United States has the obligation to provide related services, and to take other appropriate actions necessary to protect tribal self-government.[9] The doctrine may also include a duty to provide adequate social services to Indians.[10] Those conclusions flow from the basic notion that the trust responsibility is a general obligation which is not limited to specific provisions in treaties, Executive orders, or statutes; once the trust relationship has acknowledged, administrative action is governed by the same high duty which is imposed on a private trustee.[11]

The tribes have recourse in the courts if the trust reponsibility is breached. For compensable claims arising before 1946, tribes are permitted to sue for money damages in the Indian Claims Commission.[12] For claims arising after that date, the proper court is the U.S. Court of Claims.[13] Many successful suits have been brought for loss of land and for mismanagement of timber, water, and mineral resources.

In addition, although the trust responsibility cannot be enforced in court against Congress itself, executive officials are subject to suits for injunctive and declatory relief for breach of the trust duty.[14] A leading example is Pyramid Lake Paiute Tribe v. Morton, 354 F. Supp. 252. (D.D.C. 1972), where a Federal district court enjoined the Department of Interior from diverting water to a Federal project which reduced the water quality of Pyramid Lake

in Nevada. Pyramid Lake is located on a downstream Indian reservation. The court held that the Government's trust responsibility to the tribe was violated by the upstream diversion, even though the diversion was not on the reservation. A leading writer on the trust relationship has emphasized the importance of this case in the development of the trust relationship:

> The case, therefore, imposes a duty of loyalty on Federal agencies conflict with the trust responsibility to Indians, the non-Indian Federal activity should be operated so as to avoid interference with Indian trust property.

These principles clarify the crucial distinction between Congress and executive agencies in the administration of the trust responsibility. Although Congress is not subject to suit for violation of the trust responsibility, administrative officials are directly accountable to the tribes through court actions. Administrative agencies operate only pursuant to delegations of authority from Congress. Basic administrative law principles dictate that administrative officials are subject to judicial review for most situations in which they exceed their delegated authority.[15] Accordingly, Indian tribes and individuals will often have recourse against the Department of the Interior, or any other agency which violates the trust responsibility.

Many basic aspects of the trust obligation extend to an individual Indian wherever he or she may be. The duty to protect his trust resources, and the duty to acknowledge his tribal identity continue undiminished even though the individual Indian may have left the reservation.

The research of this Commission shows that the Bureau of Indian Affairs, the primary agent of Congress in the administration of the trust responsibility, has used the trust doctrine as a means to develop a paternalistic control over the day-to-day

affairs of Indian tribes and individuals.[16] The trust responsibility calls for no such course of conduct. Clearly expressed congressional legislation calls for self-determination and self-government by Indian tribes.[17] Federal-Indian trust law, as expressed both by Congress and the courts, calls for Federal protection, not Federal domination.

1. See, e.g., United States v. Mason, 412 U.S. 391, 397 (1973); Seminole Nation v. United States, 316 U.S. 286, 296-97 (1942).

2. See, e.g., Morton v. Mancari, 417 U.S. 535, 540, 552 (1974); United States v. Sandoval, 231 U.S. 228, 239 (1913); Cherokee Nation v. Southern Kan. Ry., 135 U.S. 641, 654 (1890).

3. Chambers, Judicial Enforcement of the Federal Trust Responsibility to Indians, 27 Stan. L. Rev. 1213, 1214-15 (1975) (hereinafter cited as "Chambers").

4. Chambers, supra note 20 pp. 1230-38.

5. See, e.g., McClanahan v. State Tax Comm'n 411 U.S. 164 (1973); Warren Trading Post v. State Tax Comm'n, 380 U.S. 685 (1965); Israel & Smithson, Indian Taxation, Tribal Sovereignty and Economic Development, 49 N. Dak. L. Rev. 269 (1973).

6. See generally, Chambers, supra note 20.

7. 25 U.S.C. 348.

8. See, e.g., Cohen, supra note 2, pp. 97, 105-07, 113.

9. Cohen, supra note 3, p. 287, 289. A good example of the distinction is the Public Land Review Commission, which filed its report to Congress on the "Public lands" in 1970. Indian lands were expressly exempted from that study of the public lands. See 43 U.S.C. 1400.

10. Chambers, supra note 20, pp. 1217-20, 1236, 1246-48.

11. Chambers, supra note 20, pp. 1243-45. See also AIPRC final report, chapter 4, below.

12. Seminole Nation v. United States, 316 U.S. 286 (1942); Manchester Band of Pomo Indians v. United States, 363 F. Supp. 1238 (N.D. Cal. 1973).

13. 25 U.S.C. 70.

14. 28 U.S.C. 1505..

15. See generally, Chambers, supra note 20.

16. Chambers, supra note 20, p. 1234.

17. 5 U.S.C. 701-06

VII. TRIBAL POWERS

VII. TRIBAL POWERS:

Indian tribes have all those powers of government not specifically given up by treaty, agreement or specifically legislated away by the Congress of the United States.

Those powers include, but are not limited to:

1. The power to establish legislatures, usually called tribal councils.

2. The power to establish their own police system.

3. The power to establish tribal courts.

4. The power to tax.

5. The power to grant marriages and divorces.

6. The power to provide for adoptions and guardianships.

7. The power to regulate hunting and fishing.

8. The power to control economic development through zoning regulations and other land use planning devices.

9. The power to regulate non-Indian individuals in Indian country.

10. The power to set their own environment standards - air, water, the use of pesticides, etc.

11. The power to define thier own membership.

Not all tribes exercise all powers. Because of the fact that tribal governments are only beginning to come out of the domination of the Federal government, many Indian governments are weak and unsophisticated by non-Indian standards. The increase in numbers of Indian lawyers and other professions has brought Indian nations to the point where the Federal government has been, and is being, called to account for past management exercised under the trust relationship. Tribes are now saying, "You will exercise the trust responsibility from now on by helping us to do it ourselves."

The expertise and support of the trustee must be used to protect and enhance the assets of the beneficiaries of the trust.

VIII. TRIBAL GOVERNMENTAL STRUCTURES

VIII. TRIBAL GOVERNMENT STRUCTURE:

Tribal governments are organized in a variety of different ways. Some of them retain much of the traditional form of government while others have adapted constitutional forms that reflect the influence of the Indian Reorganization Act of 1934. Some have both. Even if there is not an "official" government.

The word tribe is an Anglo-American concept derived from Germanic groups in ancient Europe. Traditionally, Indians were organized into bands, nations, clans, or pueblos, and were governed by chiefs, headmen, or other leaders or groups of leaders, variously designated. The Federal Government found this difficult to deal with. They would sign a treaty with a particular band of Apaches and assume that it included all the other Apache bands. This was not the case.

In certain instances, the Federal Governement specifically organized bands of Indians into tribes for the expressed purpose of signing mineral leases. In 1921, the Navajos were organized into a tribe and a tribal council was set up particularly for that reason. The Navajo people had previously been organized on a community based clan level. The idea of decision-making on a tribal level was a completely new one for the Navajos, it was a foreign idea.

As the influence of the colonists in the East, the French traders in the North and the Spanish in the Southwest became stronger, many of the traditional Indian governments changed under the dominance of these other cultures. In New Mexico, when the Sapanish arrived in 1598, they didn't understand the traditional Pueblo form of government with their religious leaders, Caciques, and war chiefs. The Spanish therefore, imposed a civil government on the Pueblos. This system included a Governor, Lieutenant Governor, Sherrif, Aides, etc.

The Allotment policy (see historical section) created havoc with tribal government structures.

As a result of the disintegration created by the Allotment policy, military conquest, the suppression of culture and tradition, and racist denial of civil rights, incalculable damage had been done to the Indian people and tribal units. Tribes had been moved about like livestock until in some cases, the original homeland was no more than a legend in the mind of old men and women. Children had been removed

from the family, by force at time, and kept in close custody until they lost their mother tongue and all knowledge of who they were. Land losses were catastrophic, while the failure of the Government to provide economic tools and training for proper land use. The remaining land holdings of the tribes were left untenable or leased to white farmers at ridiculous rates. As a result, only 2% of the Indians had incomes over $500 a year. Health care was non-existent, the death rate and infant mortality rate often was 50 to 100 times the national average.

A Federal Commission organized to report on Indian policy (the Merian Commission) observed: "It almost seems as if the government assumed that some magic in individual ownership of property would in itself prove an educational civilizing factor, but unfortuantely this policy has for the most part operated in the opposite direction."

Growing recognition of the dire conditions led to another national movement for reform. This resulted in the adoption of the Indian Reorganization Act of 1934. The act was an admission of the failure of allotment and assimilation policies, and a recognition that Indian people must be treated as distinct and sovereign peoples. The provisions of the act:

-prohibited future allotment of Indian lands.

-restored back to tribal ownership the remain- surplus lands lost under allotment (except those sold, approximately 100 million acres).

-set aside funds for the acquisition of additional lands for tribes.

-provided for the reorganization and promotion of tribal governments so that tribes could manage their own affairs and provide services to their members.

-set up a revolving loan fund for the purpose of promoting economic development.

-provided for Indian preference for employment in the Indian service.

-advanced funds for vocational and professional education for Indian children.

The Indian Reorganization Act was designed to restore some measure of the land base and self-government which tribes had enjoyed prior to the allotment and assimilation policies. Unfortunately, the Act was not coupled with any major changes in Bureau of Indian Affairs management of economic development nor did it address the basic questions of capital, technology, the basic needs for real development.

Though the intent of the Reorganization Act was excellent, as is the case with much Indian legislation, it lost something in translation. Supposedly in an effort to assist tribes develop governmental structures, a "boilerplate" form of tribal constitution was developed and passed on to the tribes for adoption by the Bureau of Indian Affairs. This "boilerplate" had little relationship to traditional forms of government and in retrospect seems to have been designed to facilitate control of tribal governments by the Secretary of Interior by requiring secretarial approval of any changes to a constitution and often for any codes or laws passed by the legislative bodies established by it. That is not to say that all tribal constitutions are alike; merely that most contain the same provisions. Most tribes now have studies underway to rewrite or amend their constitutions. Some have adopted strong tribal codes covering a broad range of subjects: civil and criminal jurisdiction, court systems, land use, environmental control, etc.

In some cases, the Congress dictated governmental structure. The case of the Osage Nation is particularly striking and is attached as Appendix A to this Section.

There were other more subtle ways used to change the traditional tribal governments. As the idea of assimilation grew, many efforts were made to make Indian governments conform to typical Anglo models. One such area of change was in the decision-making process. Traditionally, in most tribes a group of the ruling elders would decide things by consensus. This would include who were to be the leaders of the tribe or band. This procedure was sometimes very time consuming, but it was important that the tribal leaders be of one mind in dealing with a particular issue. The Federal Government thought this was inefficient and imposed the secret ballot system in some tribes for elections. Perhaps this did "streamline" the actual election process but, it also took away from the tribes a cultural value and a manner of making their own decisions. As traditional governments began to disintegrate, the tribes became vulnerable to other cultural changes and influences.

Section XI which is made up of summaries of information about the member tribes of the Council of Energy Resource Tribes. It provides information regarding individual tribal structures which will give the reader some idea of variances between tribes.

Section VIII: Appendix A

A CASE STUDY: The Osage Nation

An example of how Federal Indian Policy has affected tribal control and development of Indian resources is the case of the Osage tribe as related by Charles Lohah.

> "I'm from the Osage tribe in Oklahoma," said Lohah, "our so-called tribal government was established and is presently maintained by Federal statute. Congress said, here's your tribal government! At the time (1906) we had large and undeveloped areas of coal and oil. The statute was totally intended for our exploitation - I won't dignify it by calling it development.
>
> Time changed. We have a per capita distribution system which made everybody happy during the oil boom of the twenties. No one worried about our tribal government system until it became unworkable as a tribal government.
>
> We've tried to alter its structure. Very simply, what we tried to do was split the business functions from the tribal governmental functions and make what is now the "Minerals Exploitation Council" into a subsidiary of a tribal council. It seemed very rational to us, but since it was established by a Congressional enactment, it had to go to Congress to get approval. It writhed around in the committee rooms and died like a dog on the floor. So we still have a 'tribal' government restricted to functioning like a wholly owned subsidiary of a multinational oil company.

In 1896 James Bigheart authorized the first attempt to develop Osage mineral resources. A ten-year blanket lease was executed for the whole reservation with Phoenix Oil Company founded by Edwin B. Foster. The company brought in its first well that same year.

When the original lease expired in 1906, a new 680,000 acre ten-year lease was granted to the same developers under a new title - Indian Territory Illuminating Oil Company. Although the company agreed to royalty increases from one-tenth to one-eighth, it did not pay a bonus for specific

leases. At the time, such bonus payments on proven oil reserves was common. However, interests in Oklahoma, particularly the Governor, hinted of political favoritism and corruption and the lease stood as executed, allowing the I.T.I.O. Company and its subleases to continue profitable exploitation of Osage resources.

At this time the Osage reserve consisted of 1.4 milion acres of fertile, well-watered prairie and heavily timbered hill lands rich in deposits of oil, natural gas, coal, and other minerals. In addition, the tribe had a trust fund valued at $8,373,658.00. This amount consisted of compensation for various lands relinquished under past treaties. The annual income of the tribe received from interest on the trust fund and from various grazing, oil, and gas leases totalled nearly $1,000,000.00, or an Osage per capita income of $500.00, in addition to any other individual earnings. Congress apparently concluded that the enjoyment of this wealth without responsibility was somehow demoralizing to the Osages and consequently embarked on a policy of gradual emancipation.

Having been exempted from the Dawes and Curtis Acts of 1887 by Congress, measures were taken to secure tribal approval of a special Osage allotment program. By 1906, the Osage Allotment Act had received congressional approval. The Act differed from previous allotment acts in that it reserved mineral rights to the tribe, a concession championed by the Osage full-bloods in exchange for their approval of the allotment policy. Its provisions also included the division of the entire reservation into 160-acre tracts and allotted among the 2,229 enrolled Osages. These tracts were designated as homesteads and restricted against alienation for twenty five years.

The surplus land, beyond the 160-acre tracts, was not opened up for sale to outside land speculation; rather it was divided among the enrolled members, giving each Osage a total allotment of 658 acres. At the time of the allotment proceedings, for some reason the tribal roll included families who were not Osage. However, the roll was not changed, and of the original 2,229 allottees 860 were listed as full-bloods and 1,369 as mixed-bloods. The Act apportioned the tribal trust fund into 2,229 shares known as head rights, and credited the income to individual accounts. In addition, the allotment act included provisions for the creation of a new Osage tribal council. The primary duties of the new council, consisting of a principal chief, and assistant chief and eight councilmen, was to act on behalf of the Osage tribe in leasing tribal land for mineral development. Since

the Osages were specifically exempted from the provisions of the Wheeler-Howard Act and the Oklahoma Indian Welfare Act, the tribal council does not operate under a constitution nor a corporate charter. Instead, it functions similarly to a board of directors of a corporation, exercising authority in leasing mineral estate, in determining the bonus value of any tract offered for lease, in the use of tribal funds, and in the administration of tribal reserves. Thus, one could view the official, congressionally sanctioned Osage tribe as consisting of headright owners or "shareholders", with a board of directors which transacts business concerning the stock in Osage mineral trust. Since the 1906 Osage Allotment Act, the council (board of directors) has been elected quadrennially by only those Osages who possessed or inherited one of the original 2,229 "headrights".

The successful production of oil on Osage allotments made those acres not under lease even more attractive to competing corporations. For a time they submitted sealed bids through the Department of the Interior, offering cash bonuses to the tribe for the right to develop specified leases. As these offers were usually small, the Osage Council instituted a system of public auctions where particular tracts were leased to those who paid the highest bonuses. Though the bonuses and royalties paid by the various firms were sizeable, they amounted to only a minute fraction of the oil profits made by the oil companies. Tremendously wealthy for the times, the Osage were frequently extravagant and reckless in the use of their funds.

Due to the overnight transition from dire poverty to unexpected riches, little or no attempts were made to correspond and educate the Osage in the use of their new found wealth. On the contrary this ignorance was used to the advantage of many non-Osage interests. In many instances unscrupulous outsiders accounted for much of the wild spending and dissipation of funds. The Osage were openly exploited by lawyers and county judges after being declared incompetent and assigned legal guardians by the court. Other attorneys and doctors ministering to wealthy and unsuspecting Osage charged and usually received huge fees for their services. At the same time merchants enticed Osage to buy everything from Pierce Arrows to picture albums. These items were frequently purchased on credit on which a high interest rate was attached, despite the income received from headright payments and contrary to instructions issued by the tribal agent.

In addition to the shady practices of the locals, the wealth of the Osage attracted other criminal elements onto

the reservation, instituting what observers labeled as the "Osage Reign of Terror." In one famous case, an Indian family was systematically exterminated by poison, dynamite explosion and hired gunmen. The murders were traced to the town banker and his nephew, husband of the last living member of the family, who stood to inherit eight Osage headrights.

The reckless spending, corruption and criminal activity surrounding Osage wealth finally convinced the Federal government that careful supervision was necessary if the tribe were to retain any of its wealth. In 1921, Congress ended the practice of immediately paying out to the headright owners all that was received in bonus and royalty payments. Instead, it directed that the Osage allottees not having certificates of competency should receive certain quarterly stipends, with funds accruing beyond the payments - "surplus funds" - to be invested in U.S. bonds and state bonds, or place in time deposit in local banks. After 1925 these surplus monies could be expended for the benefit of the individual Osage upon the approval of the Secretary of the Interior. These belated procedures brought some conservation of funds.

This federal supervision did not apply to all Osage. The Osage Allotment Act passed in 1906 had provided those allottees judged capable of managing their own affairs with certificates of competency. Such certificates removed all restriction on the allottee except for his interest in the tribal mineral estate and the 160-acres homestead allotment. In 1929, Congress directed the issuance of certificates to all allotted adults of less than one-half Osage Indian blood.

Initially, a competency certificate did not permit alienation of the original 160-acre homestead allotment. However, legislation in 1921 removed that restriction upon those Osage with less than one-half Indian blood. Once certified as competent, the Osages usually sold their land by 1957, the surface rights to 1.1 of the 1.4 million acre reservation had been alienated. The restrictions upon land allottments and the mineral trust payments owned by the Osages of one-half or more Indian blood have been continued until Congress sees fit to remove them.

No doubt, past federal policy mandates seemed quite approriate when Osage tribal business centered almost exclusively around the development of mineral resources. However, in recent times the concerns of the Tribe have extended beyond mineral matters to issues related to various federal and state programs relevant to Osage communities.

Consequently, the legitimacy of the Osage Tribal Council, whose duty by law is limited to managing the mineral estate and is representative only of those Osages holding headrights, to administer programs for the entire tribe is being questioned.

As oil production on the Osage Reservation increased Osage headrights became more valuable and the Osage owners became more attractive to individuals seeking wealthy spouses. Thus, mineral headrights have passed out of the Tribe through mixed-bloods heirs, fraud, coercion and even homicide. As a result, many Osage Indians by blood do not own headrights and are therefore ineligible to participate in the federally recognized Osage tribal government while some non or fractional-blood Osages in effect make decisions for all Osage.

Of the 8,244 Osage Indians enumerated in the 1970 U.S. Census, 323 were listed as full-bloods. Since 'membership in the Osage Tribe' depends on ownership of headrights rather than degree of Osage Indian blood, 'members of the tribe' have taken up residence in 300 different communities in at least 36 states. The largest single group away from the State of Oklahoma live in Southern California. Comparatively, most of the Osage of more than one-half Indian blood continue to live in Oklahoma; the majority still on the Osage Reservation. In addition, latest figures on Osage headright payments indicate that at least half of those who received royalties were less than one-quarter Osage blood.

Thus, the situation today can be described as one in which a federally recognized Indian tribe is composed solely of shareholders in the tribal mineral trust fund; most of whom live out of state, are less than one-half Osage blood and for the most part do not participate in local tribal affairs except in the area of mineral development. Yet, only these members elect the Board of Directors or Osage Tribal Council which in turn has assumed responsibility for all Osage tribal matters particularly those affecting the Osage who live on the reservation and are not mineral headright owners.

Not only has the federally imposed Osage governmental system been unrepresentative of the Osage Tribe; its administration of Osage tribal affairs has been woefully shortsighted. In its almost exclusive concern with mineral development by outside interests, it has failed to engage in any long-range economic planning designed to benefit all members of the Osage Tribe in the future.

The per capita distribution of mineral trust funds has created a multitude of problems for tribes existing under the system. Obviously, the method was quite convenient for federal officials since little was required to simply distribute tribal funds as opposed to assuming their full trust responsibility to protect and promote the best interests of the tribe which would have required a great deal more concern, effort and foresight. The per capita system as it relates to Indian tribes has been criticized for the following reasons: first, income derived from per capita payments are at levels which nearly extinguish incentives for gainful economic activities, second, per capitas destroy family organization by placing each family member in a financially independent position, third, the expectation of continued income served to reduce educational incentives by eliminating any apparent need to acquire employable skills, finally and perhaps the most applicable to the Osage, is the fact that (through) the dissipation of tribal funds under the per capita system meaningful economic development of the reservation has been stifled.

On one level, the heavy reliance upon the headright payments as a primary source of income will create problems for some individual tribal members.

... On the tribal level, the major problem confronting the Osage due to the lack of foresight and proper management of its mineral resources, is the economic future of the tribe. Much of the Osage land base is already so eroded that grazing, farming or ranching as viable economic pursuits are virtually ruled out. Thus, the exploitation of mineral resources will probably contine to be the sole economic activity of the tribe. Today, there are approximately 9,000 producing oil and gas wells located on the Osage Reservation. Since the discovery of oil deposits, 1,056,200 bbls of oil have been produced from Osage lands. The remaining oil reserve is estimated at 3.2 billion bbls of which 12% or 384 million bbls are thought to be recoverable by present production techniques. Until recently, the shallow deposits of natural gas on Osage land have been largely overlooked. As such, data on the gas reserves are not as complete however, a reasonable reserve estimate of 7 trillion cubic feet has been proposed.

No doubt, primary recovery of oil and gas deposits will continue as well as secondary and tertiary attempts. However, these methods have their limits. According to current projections, the Osage fields are expected to produce for at least another 20 years providing revenues averaging more than $4 million per year for the headright owners. Yet as with all

natural resources, the oil and gas deposits will be depleted in time and the tribe will have to seek alternative sources of income if it is to survive.

Of most concern is the fact that many reservation Osage realize this situation but because they do not own mineral headrights they do not have a voice in determining their own tribal destiny under the current Osage governmental system. For some, it is clear that current Osage income must be used to develop a more diversified reservation economy to sustain the tribe when the exploitation of tribal minerals is no longer feasible. Unfortunately, the per capita system itself has blocked many useful attempts aimed at tribal cooperation and self-determination by perpetuating intra-tribal conflicts based on headright ownership.

As of 1971, Osage oil and gas fields have generated more than $511,481,000 in revenues for Osage headright owners. In 1970, the annual headright payment amounted to $2780. Due to the rise in the market value of oil and the continued productivity of some wells using secondary and tertiary recovery techniques, the headright payment increased to $9040 in 1976. Since mineral royalties are credited on a per capita basis to individual accounts or divided among the heirs of each of the original 2229 allotees, some individuals may possess as many as 5 full headrights while others may be entitled to only a fraction of one headright. Thus, headright payments made to individuals ranged from $45,000 to $0.25 in 1976.

However unfair the distribution appears, most unfortunate is the fact that the hundreds of millions of dollars the Osage Tribe earned from it's fractional share of the profits could have provided the tribe with the necessary funds to build a diversified long-term economy and thereby provide a basis upon which the Osage could establish their self-sufficiency as individuals and as a nation. However the continued lack of economic planning which has traditionally accompanied the development of Osage mineral resources offers the tribe little hope for the future. The continued division of large sums of tribal capital into small individual per capitas dissipate any remaining potential for real economic development and the creation of a viable reservation economy to support future Osage generations.

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IX. BARRIERS TO DEVELOPMENT OF INDIAN RESOURCES BY INDIAN NATIONS AND SOME SUGGESTED ERDA RESPONSES

IX. BARRIERS TO DEVELOPMENT OF INDIAN RESOURCES BY INDIAN NATIONS AND SOME SUGGESTED ERDA RESPONSES

There are many barriers to the development of energy resources on Indian lands: some are internal, some are external, and some are merely perceived barriers. Perhaps the most harmful barrier is an attitudinal one. The larger society is accustomed to thinking of Indian reservations as welfare communities with their needs supplied by the Federal government. The American business community is not much more enlightened. The Federal government has contributed to rather than dispelled this misconception. It has poured millions of dollars into programs to subsidize non-Indian businesses on Indian reservations. Industrial parks, wage subsidies, lessor favoring leases, etc., would tend to make the business community look on Indian tribes as somewhat less than business entities. Imagine their consternation as they are suddenly brought face to face with the idea of tribes as private owners of vast stores of raw materials which they need for their business. And, at the same time, they must deal with the fact that tribes are not only the owners with ownership rights, they are the governmental entity with taxing and regulatory power. With the added layer of federal trust responsibility, with its inadequate, incompetent and antiquated procedures with which they must deal, it is small wonder that the business community is undergoing culture shock.

This perceptual barrier is being rapidly overcome as tribes assert themselves as sovereign developing nations and the business world sees them in this new light. Further, as the business community comes to understand that tribes will refuse to be sold out by their trust officer, the business community will become highly innovative in finding ways to work with tribes. There is a real and immediate danger that they will try first to align themselves with the Federal government rather than with the tribes. For this reason, it is imperative that the tribes move quickly to develop their own sophistication and form their own alliances to withstand the pressures.

There are other barriers as well. Some of those are:

1. Reluctance to develop, resulting from past experience.

   Energy owning tribes are largely the victims of inequitable leases made in the early 1950's. These leases were negotiated by the BIA for the tribes who felt as if their only option was to sign

unsatisfactory leases or no leases at all. The terms are largely royalty rates based on the price of the minerals at the time the leases were negotiated, with no escalation clauses, and with little or no tribal control of the method or extent of the development. Further, there was little consideration by either the BIA or the tribes of the environmental and sociological impacts of these leases or the resulting agreement.

For instance, much of the Northern Cheyenne coal reserves were leased for royalty rates of 17.5 cents a ton. That is the price of half an ice cream cone for a ton of Northern Cheyenne coal without regard to its quality or market price. Further, the agreement plans for these leases, if carried out, would result in the building of several gasification plants and other support facilities which would require a work force of thirty five non-Northern Cheyennes for every member of the tribe. The air, the water, the school systems, the health service systems, the housing, roads, law enforcement systems, court systems, and every support system for the community would be over-loaded and overcome by non-Indian intervention into the community.

Tribes are now aware of the pitfalls of these old fashioned deals and are very careful about entering into new ones, particularly with companies with whom they have had previous experience, where the deals worked out to be disadvantageous to the members of the tribe. Because of these concerns, many tribes have virtually said, "Kings X. Before we deal again, we're going to know what we are doing. We won't take your word, the government's word, or anybody else's word until we figure it out for ourselves."

2. <u>There is a lack of information about the extent, quality and marketability of tribally owned resources</u>.

Indian mineral resources have been sold without any comprehensive inventory of the extent of the reserves, their quality or their market-ability. They have been largely leased out on "competitive bid" leases, most of which have been originally proposed by some developer who has discovered, or has reason to believe, that a certain resource exists in mineable quantities on an Indian reservation.

When the Council of Energy Resource Tribes was organized in 1975, the first request to the Federal Energy Administration was for funding for complete, comprehensive inventories for each of the tribes in order that they might have a firm base upon which to base future development decisions.

The Bureau of Indian Affairs, embarrassed by this request, instituted its own program to inventory tribally owned resources. They scheduled an inventory process which would take 20 years to complete and would be done in phases.

Recently, the Bureau of Indian Affairs announced its intention to the Council of Energy Resource Tribes to change its inventory policy to provide inventories for those tribes presently considering development. They have made some innovative moves in this direction, particularly in the kind of assistance they have provided to the Crow Tribe in its negotiations with AMAX and Shell. In that case, they called upon computer capabilities of the Bureau of Mines and the U.S. Geological Survey to supply the data that would allow the tribe to negotiate from a decent information base with these sophisticated companies. Nevertheless, this new service has been minimal to date. It is expensive and has only been called into play after the exertion of considerable political influence by the tribe. One of the major roles that the Energy Research and Development Administration could and should play in the Indian community is to put its expertise and resources at the disposal of the tribes and the Bureau of Indian Affairs in preparing data for further negotiations or re-negotiations or energy development agreements.

The latest thinking in the Indian community is that there should be no more leases. Rather, the tribes should enter into other kinds of development agreements, such as joint ventures, contracts for work or other more sophisticated agreements whereby the tribe retains ownership of the resource and controls the methods of its development. Some tribes are looking forward to the development of their own mining companies and would thereby become the actual physical producers of the energy resources. It seems conceivable that the Energy Resources and Development Administration could

commit funding and expertise to assist the tribes in the full development of those mining companies.

3. <u>There is a basic lack of tribal capital</u>.

Energy development has very high capital costs for start-up operation. The tribes do not have the cash available for supporting the initial costs, or in most cases, for initial planning and exploration costs. The probability of securing capital is compounded by the fact that lending institutions have trouble recognizing tribes as viable business entities. Some of these problems can be solved if both the tribes and the lending agencies come to understand that the resource, itself, is capital and that it can be used to secure loans using a leasehold interest, sales contract, or other security agreement.

The Energy Research and Development Administration could provide a service to the tribes by providing support for research programs into the costs of development, identifying possible sources of funding, innovative financial arrangements, marketing systems, etc.

4. <u>There are complicated legal problems</u>.

For instance, water is a crucial element in the development of most energy resources. Indian water rights are perhaps the most controversial subject in the country today. The protection of both the quantity and quality of the water in Indian country is a matter which will, no doubt, be under litigation for many years. Under the <u>Winters Doctrine</u>,[2] Indians have claims to a major portion of the water in the western United States, where most of the energy resources are found. Under the <u>Winters Doctrine</u>, it seems clear that Indians are entitled to all the water they need in order to develop the resources of their reservations in any way they see fit. However, almost every month brings a new court case to test Indian rights. Quantification of Indian water rights based on various premises-which range from the technology available at the time the reservation was created to the best guess of any technology which may be developed in the future - has been proposed regularly.

Our position is that, if Indian water rights must be quantified, and it appears that perhaps they must in view of water shortages we have already seen in the 70's, the only rationale for quantification is based on the best possible assessment, not only of all the natural resources present on the reservation, but also of the best information available on the state of the art of any technology which may be used to develop them within the foreseeable future. Perhaps the Energy Research and Development Administration could provide the information to the tribes on the state of the art of energy related technology.

Taxation is another legal issue, as a result of the failure of the Federal Government to protect tribes from encoachment by state government on the jurisdiction of the tribes, unhappy situations have arisen where state governments who are not providing governmental services to reservation residents are taxing the resources developed on the reservation.

For instance, the states of Montana and New Mexico have severance taxes on the development of coal, which provides income to the state several times that received by the tribe from the same ton of coal. The Navajos who are getting 15 to 20 cents a ton for their coal are providing revenue to the state of New Mexico of $1.25 a ton on the same coal.

Land ownership problems on reservations, which have been compounded by government attempts to destroy reservations are so complex that leasing, let alone development, is in some cases impossible.

On reservations where land has been alloted, even though some may be under Indian ownership, heirship problems cause some small parcels of land to have as many as 80 signatories on any lease for development agreement. Furthermore, ownership of surface rights and minerals rights might be held by different parties. This is largely the result of the general allotment act of 1887 and various disestablishing acts which opened up portions of the reservations to non-Indians. In many cases, because of the Bureau of Indian Affairs ineptness at record keeping, it is impossible to trace the ownership of some parcels of land so that clear

title can be established.

Archaic and inadequate regulations promulgated by the Bureau of Indian Affairs controlling the development of resources on Indian land inhibit and sometimes preclude development agreements. New regulations have been proposed by the Bureau of Indian Affairs which would update those old regulations. However, those have been in the process of development for about a year and a half and are not yet finalized.

The proposed regulations are improvements, but are not yet advanced enough to meet the changing needs of the tribes.

5. <u>There is a lack of expertise and experience within the Bureau of Indian Affairs to permit them to adequately perform their duties as fuduciary trustees</u>.

It is an undisputed fact that the Bureau of Indian Affairs does not have the professional capability to adequately perform this responsibility. We would not allege that this incompetency is malicious, rather that it came about through lack of knowledge and lack of emphasis on development of competence.

Again, it seems incredible that a fiduciary trustee would have operated for some 150 years without having developed expertise in dealing with the complex problems of resource development. Nevertheless, that is the case. In all fairness, the Bureau of Indian Affairs is attempting to develop the kind of competence that the tribes need. However, the general feeling is that it's too little too late.

The tribes are now looking to develop their own expertise, either individually or through their organization, the Council of Energy Resource Tribes. One worries that if the tribes are able to develop the kind of experience and expertise themselves to negotiate complicated favorable agreements, the Bureau's expertise could be so limited that they will not be able to give their stamp of approval, as they are required to do.

An example of this kind of problem is the consternation caused by the Navajo negotiated agreement with Exxon. It took the Bureau of Indian Affairs four years to determine whether it was an acceptable agreement or not, even though its terms were far better than any previously negotiated agreement. The Bureau of Indian Affairs capabilities end with the standard lease form.

6. <u>There are religious and sociological barriers to the development of energy resources on the Indian reservations</u>.

Those barriers vary greatly from tribe to tribe, as the land often holds a particular religious significance. Certain religions do not permit anything to be extracted from the land. On some reservations, there are certain areas which are of such significance that energy development is foreclosed there.

For all tribes, the land is a major tangible asset which ties the people to their traditions and their history.

Similarly, the social impacts of energy development can be devastating to tribal sociological patterns. Large scale energy development brings needed employment opportunities, however, they also bring a new economic caste system. A new group of salaried workers, whether they be Indian or non-Indian, brings a new economic flavor to the community. An example of this kind of problem is that created by the building of the Alaskan Pipe Line. Suddenly, there was an influx of people on large salaries who were able to pay more for food and services in the community, with which the local people could not compete. Those people not drawing the large salaries as a result of the development were subject to paying the same prices that the more affluent workers had to pay. Thus, the poor got poorer.

Further, the development of a mine or of a gasification plant creates jobs in certain areas where there are no community structures for support: no housing, no schools, no hospitals, etc. Workers are often required to live in work camps and are unable to have their families with them.

This creates intense social problems and the destruction of family and community relationships.

Perhaps it would be appropriate for ERDA to provide tribes contemplating extensive development with funding for technology assessments of the sociological, economic and cultural impacts in addition to environmental impact statements. Further, any proposed energy legislation addressing impacted communities should include a detailed analysis of the special needs of Indian communities.

7. Efforts of the Federal agencies dealing with development have focused on Non-Indian developers whether it be industrial development or development of natural resources.

   There are many examples. Agricultural and range land have been leased out to non-Indians. Coal, oil, uranium - all have been leased to non-Indians. Only in the last three years has there been any support for joint ventures. Insofar as we can determine, only two tribes, the Blackfeet and Jicarilla have actually operating joint ventures though others are in the negotiation process. There has been no support for the development of independent tribally owned production companies.

8. Tribes lack the power to regulate development impact which result from off-reservation development, even if these impacts have a profound effect on their way of life.

   This can result in a significant deterioration of the tribe's bargaining power. If, for example, an orebody exists both on the reservation and off the reservation and the tribe has stricter mining controls and profit-sharing systems, than a company could threaten to only mine the off-reservation position of the orebody. The tribe could conceivably suffer many of the impacts of development while getting none of the benefits.

9. Financial accounting of royalties and production has either been non-existent or has been done negligently.

   A 1975 Department of Interior audit of USGS oil and gas royalty accounting reported that USGS and

the BIA has allowed energy companies to pay royalties years late without charging interest. Almost all royalties, involving hundreds of millions of dollars are regularly late.

The Jicarilla Apache tribe found through an independent audit of their oil and gas royalty accounting, that 17 oil companies consistently made oil and gas payments late.

In addition, there is no auditing system for monitoring the production, marketing and royalty data reported by the energy companies. This effectively removed any checks and balances on corporate dishonesty or mismanagement. At Laguna Pueblo, there has never been an audit of the uranium operation there since 1956 when uranium operations began, even though the Department of Interior specifically obligated itself to do so before any operations began. (This is one of the largest uranium operations in the world). Information accumulated by an AIO Researcher indicates that several tribes may have been defruaded of uranium royalties due to questionable pricing systems. This information will be published in an AIO publication, <u>You Don't Have to be Poor to be Indian</u>.

10. <u>Federal Power Commission Regulation of Royalty Gas</u>.

Most natural gas leases allow the tribe to take a percentage of their royalties due as a percentage of the gas produced, rather than in cash only form. Several producers refuse to make this gas available because they claim that the entire stream has been committed to interstate commerce and cannot be withdrawn without a certificate of necessity and convenience from the FPC. The result is a delay of two years or more for FPC action and some tribes who contribute tens of millions cubic feet of gas, must purchase gas for their own needs at prices up to 15 times what they are paid for their own gas. Only the most callous bureacratic evasiveness can avoid the absurdity of these situations in which the U.S. has approved and defends the validity of a contract assuring the tribe's right to royalty in kind and simultaneously denies the tribe this right.

11. State Taxation of Indian Mineral Development.

It is well established that most states have no authority or jurisdiction to regulate the affairs of Indians on their reservations. Indeed, the enabling acts and the Constitutions of most of the western states contain explicit disclaimer clauses which guarantee to the United States exclusive jurisdiction over Indian lands. Yet, on those reservations in which coal development in the form of state taxes than the Indian owners are receiving in the form of royalties. This fact reflects the magnitude of revenue lost by Indian tribes that could be put to use in providing planning and delivery of governmental services which dozens of official reports have found to be so critically lacking in reservation communities. In addition, the various states are taxing the production of oil and gas on Indian reservations and the producing companies are indemnifying themselves for up to 16 2/3% of the taxes so paid out of the royalties which would otherwise be due to the Indian mineral owners.

12. There is a basic conflict of interest within the the Department of Interior which pits the trust responsibility to Indians against the other agencies within the Department with missions for development which conflicts with the best interests of Indians.

This conflict is recognized and reiterated in the Federal Trade Commission's Bureau of Competition Staff Report on Mineral Leasing on Indian Lands, published in October, 1975.

13. The relocation program of the 1950's (wherein tribal members were encouraged and, in effect, forced off reservations into urban areas) has caused great internal pressures within the tribes as tribal members reassert their Indianness and return to reservation communities.

The Federal Government devised a program to relocate reservation Indians into urban areas in response to the poor economic situations on reservations. Rather than improving the economics of Indian families, they found themselves thrust into a foreign community without the reinforcement of their tribes and quickly moved from being

economically poor on reservations to being the poorest in the inner cities. The Federal Government then decided that since those Indians had left the reservation, they were no longer Indians and terminated services to them. This policy created an artificial conflict between tribal members in urban areas and those who stayed on the reservation by setting into motion an intense rivalry for already scarce funds for social services programs. The injustices of Federal policy and the new indignities forced upon Indian people in the cities, gave rise to a new political force in the Indian community. The so-called militant organizations, for example, were first formed as a method of mutual protection in urban areas. Such groups began to call attention to the injusticies that have been perpetrated against all American Indians. This new consciousness-raising movement deserves a great deal of credit for the Indian renaissance of the last few years. As the Indian community began to read in newspapers, as well as see on television, that other Indians were asserting themselves and putting the blame for their poor economic conditions, discrimination, etc., on the society and the Federal Government, Indian people began to turn their feelings of anger and frustration outwardly rather than inwardly. They began to express themselves as a people of value and with values worth keeping and nurturing, and a rekindling of spirit and a new determination was born.

On the reservations, there also developed an understandable resentment of the attention being received by this group of "upstarts" on the part of leaders who had been saying the same kinds of things for many years, and who had worked diligently and largely without recognition within the system, to bring about change. Many of this new group had left the reservation at a very early age with their parents or perhaps were born in the cities. How dare they purport to speak for Indian people--they had been assimilated. A third group, Indian people who had been "assimilated"; that is, had "made it", perhaps through non-Indian educational systems, and were functioning as members of the larger society, also began denouncing their so-called assimilation and reasserted themselves as Indians.

The larger society then played another trick on Indian people. Any act of assertiveness was

called militancy. Any act of militancy immediately identified you as a trouble maker. The Federal Government and the larger society, no longer able to ignore the conditions Indian people had to live in, began to look around for more conservative voices to deal with. And they began to play Indians off against each other. As usual, the method is money. When the Office of Economic Opportunity was created in the early sixties, the government, after much pushing, established an Indian Desk (now the Office of Native American Programs in the Department of Health, Education, and Welfare) to address the needs of all Indians--those living in urban and off-reservation areas, as well as on reservations. Truly militant and sometimes violent actions of some off-reservation people began to scare the Feds. Reservation leadership, anxious to reassert their leadership roles, were angered by this new recognition. There were pressures from those people still on the reservation to improve conditions at a faster pace. Tribal leadership began to demand a larger share of these new programs in addition to the inadequate old programs of the Bureau of Indian Affairs. The Indian people living off the reservation began to say, "okay. You share ours. We share yours." The fight was on--divide and conquer rides again.

Perhaps the exposure to the larger society has taught those living off reservation to read the trends more quickly. Perhaps being thrust into a survival situation outside the Indian community sharpened their sense of survival. Perhaps the continual frustration of dealing with an alien society has simply made them tired. Perhaps it is a reborn sense of identity and a seeking of reinforcement from family and friends. Whatever it was, or is, there is an overwhelming urge to go home. The urge to go home is accompanied by a knowledge that going home does not have to mean that you accept unacceptable living conditions--that you can be Indian without accepting poverty, poor health, poor housing, etc., as an unchangeable way of life. They go back determined to make things happen.

Meanwhile, back on the reservation, they are often treated with fear and disdain. What has happened to these children, forced out of the nest and raised in an alien society? Are they still Indian?

Can they be trusted? Are they going to bring down a new reign of terror from the white community as the "renegades" of the past did? And does their desire for change mean that they do not understand and value the hard work and dedication tribal leaders have long devoted to the survival of their people?

Thus, once again the tribe has to find a way to deal with problems they did not create.

14. Many tribes are still operating under tribal constitutions that were imposed by the Federal Government years ago.

Though they are primarily non-Indian in design, and bear little relationship to the traditional methods of government, they have become "sacred cows" and any attempt to amend them is met with great hostility. Often tribal constitutions are simply ignored until one faction or another decides to use it against the other.

Developers often offer instability of tribal governments and the threat of dissident groups taking action against them as an excuse for not investing in tribal enterprises. It is a ridiculous excuse in light of the uncertainties they face in dealing with foreign developing nations with whom they are making more favorable agreements.

15. Tribes have very limited experience in the actual marketing of energy resources.

ERDA should provide support to the tribes for marketing and transportation studies as well as for information systems and training.

The Energy Research and Development Administration should review all its programs for applicability to the special needs of Indian nations in light of the Federal government's special responsibility. Great care should be exercised that resources committed to Indian problems be responsive to the needs of Indian nations rather than responsive to the art of grantsmanship.

FOOTNOTES:

1. Winters Doctrine, Winters v. United States, 207 U.S.564 (1908)

X. ERDA RESEARCH AND DEVELOPMENT ADMINISTRATION PROGRAMS

X. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION PROGRAMS

The Energy Research and Development Administration, The U.S. Geological Survey, Bureau of Mines and other agencies which will be included within the research and development arm of the Department of Energy are all involved in a number of programs which could be quite useful to many tribes. The following section of the report includes a number of ERDA's programs which tribes could have direct access to. These programs include the following areas:

I. Exploration Programs

II. Energy Extraction and Production Technologies

III. Marketing, Pricing, Supply and Demand Information

IV. Mining Economics, Mining Engineering and Geological Information

V. Impact Analysis and Technology Assessment

I. Exploration Programs:

A. Fossil Energy: Resource Appraisal: To assess the coal, petroleum, natural gas, oil shale and water resources of the United States and to develop methods for the detection, evaluation and recovery in an environmentally acceptable manner, of existing and potential coal, hydrocarbon and water resources.

1. Coal: The strategy in coal resource assessment is to:

(a). locate and measure deposits of coal to the level of inferred reserves and to determine quantitatively the physical and chemical characteristics of the coal.

(b). determine the effects of present mining activities, and in potential mining areas, on the environment as mandated by the National Environmental Policy Act (NEPA).

(c). study the potential of long-term degradation in 8 to 10 major coal-bearing

basins that span a broad range of climatic, geomorphic, and geologic provinces.

(d). Water Needs: The strategy in assessing the water needs associated with exploiting coal is to:

(i). determine water needs and availability on a regional basis for coal extraction, conversion, transportation, and concurrent reclamation.

(ii). develop a model of the Madison Aquifer system to permit appraisal of its water supply.

(iii). appraise water needs, availability and water-quality problems of major coal slurry systems to evaluate slurry-pipeline potential.

2. Petroleum and Natural Gas: The strategy in the petroleum and natural gas resources assessment area is to:

(a). Accelerate and refine a multidisciplinary analysis of the 102 productive or prospective petroleum provinces onshore and offshore with priority on the offshore areas

(b). to provide updated information for estimates of undiscovered recoverable oil and gas resources.

3. Oil Shale: The strategy in the oil shale resources assessment area is to undertake non-technical studies using the combined earth science disciplines to provide:

(a). A comprehensive assessment of the nation's oil shale resources.

(b). To identify areas most suitable for in-situ retorting, conventional mining, and surface processing with minimal environmental impact.

(c). water needs: the strategy is assessing the water needs associated with exploiting the nation's oil shale is to:

(i). provide the data on the surface and groundwater hydrology needed to predict the amount and quality of groundwater present in the oil shale and its affect on underground mining, open pit mining and in-situ oil extraction processes.

(ii). obtain basic hydrogeologic data on aquifier properties and surface water/groundwater relations by core drilling and aquifier testing and develop predictive models of the hydrologic system.

(iii). obtain regional hydrologic data in the three state oil shale region that cannot be accomplished with the limited data collected on the leases and individual mining properties.

PROBLEMS

1. Proprietary information from deep wells on private lands and unavailability of adequate information from older wells limit hydrocarbon assessments.

2. There is a lack of resolution as to whether the sodium-aluminum minerals contained in Rocky Mountain oil shale are locatable or leaseable in the interpretation of mining laws.

3. Availability of water for an expanded oil shale industry may require acquisition of water rights from agricultural users.

ENVIRONMENTAL CONCERNS

1. Long lead times are necessary to collect and analyze geological and geophysical needs for the proposed lease sales in the hostile environments of onshore and offshore Alaska because of weather.

2. Availiability of lands for leasing is limited by

natural and man-made environmental constraints.

3. Methods to evaluate the reclamation potential of arid or semiarid lands are poorly known.

4. Waste materials are volumetrically larger than the original oil shale.

5. Disturbances of wide areas of surface land will adversely effect flora, fauna and drainage.

RESOURCE APPRAISAL: The strategy in geothermal resource assessment is to:

1. Provide periodic refinement of geothermal resource assessments.

2. Develop and test instrumentation and interpretive techniques for geothermal resource exploration and assessment.

3. Develop and test the technology for geothermal reservoirs in support of test and demonstration facilities.

4. Develop and maintain a national and regional data base on geothermal resources.

5. Classify geothermal resources on federal and Indian lands in terms that will establish a fair market value for their commercial use.

6. Establish and administer the procedure for leasing federal and Indian lands for geothermal resource development.

PROBLEMS

1. A court case is in progress (U.S. vs. Union Oil, et al.) to determine whether mineral include rights to geothermal resources.

2. Delays in lease issuance, though much reduced on federal lands under BLM jurisdiction are being caused by the needs to determine land status, formulations of special local stipulations, and environmental study requirements.

3. New or special regulations may be required to protect the land surface during exploration and extraction of new forms of geothermal energy.

EXPLORATION TECHNOLOGY

Initial emphasis will be on the hydrothermal resources long-range developments will successively develop exploration instrumentation and methodology for geopressured, hot dry rock, near-normal gradient and magma resources. These efforts will identify the best combinations of equipment and techniques for geothermal exploration.

LEASING OF GEOTHERMAL LANDS

In the implementation of the geothermal leasing programs, the Bureau of Land Management (BLM) is the lead agency. The BLM works with USDA's Forest Service on the leasing of geothermal resources on lands controlled by the Forest Service. The BLM is supported extensively by the USGS with field evaluations. The BLM will:

note record of filing for leases
check for overlapping filings
plot the applications on land status maps
adjudicate difficulties

The USGS performs most of the necessary technical services such as estimating the extent of reservoirs, establishing minimum fair lease prices, and conducting environmental analyses.

Geothermal leasing schedules are published in the Federal Register.

IMPACTED AREAS

Discovered Reservoirs, located at or near:

Heber, California, near reservation.
Roosevelt Hot Springs, Utah, on reservation land.
Brawley, California, near reservation.
Salton Sea, California, near reservation.
Valles Caldera, New Mexico
Beowawe, Nevada, near reservation.
Puna, Hawaii

Reservoirs with Unknown Potential, located at or near:

Surprise Valley, California
Long Valley, California
East Mesa, California
Steamboat Hot Springs, Nevada
Brady Hot Springs, Nevada
Castle Creek, Idaho
Soda Lake, California, near reservation

Reservoirs with Planned Exploratory Drilling, located at or near:

Cove Fort, Utah
Chandler, Arizona, near reservation
Crane Creek, Utah

B. Uranium, Resource Appraisal: The Strategy in Uranium Resource Assessment is:

1. To complete, as rapidly as possible, a comprehensive national assessment of U.S. uranium resources, to identify favorable areas for private exploration, and to develop improved exploration resource assessment, and production technologies.

2. To conduct geological research in order to aid the private sector in the discovery of uranium and thorium, and to develop and demonstrate mining technologies for the economical and environmentally-acceptable extraction of uranium from new ore types and low-grade deposits that are not economically recoverable by conventional mining methods.

The strategy is to develop a reliable estimate of the nation's uranium resources and to enhance the ability to find and produce uranium using several basic approaches which will be carried out concurrently.

An effort will be made to identify an increasing number of areas throughout the country which can be considered favorable for the occurrence of uranium through nationwide geologic, geophysical, geochemical and remote sensing evaluation programs. Supporting R and D will be carried out to improve exploration, mining and milling technologies in conjunction with industry. The program of collecting and analyzing uranium exploration and production data will be expanded to support a continuing comprehensive resource and supply evaluation. Pertinent information will be made available to the private sector as it is developed.

PROBLEMS

1. The risks inherent in uranium exploration and production and the uncertain extent of the uranium market have served to limit the availability of private investment capital.

2. The timing and impact of plutonium recycle and HTGR and LMFBR commercialization on uranium requirements are uncertain.

ENVIRONMENTAL CONCERNS

1. Industry may encounter increased difficulties in meeting more stringent future mine and mill radiation and effluent standards.

2. Major environmental constraints in land disturbances and reclamation, effluents, and solid waste disposal would exist in the mining and processing of extremely large quantities of low grade materials, such as shales and granites.

II. ENERGY EXTRACTION AND PRODUCTION TECHNOLOGIES

A. COAL

1. Liquefaction

The objective of this program is to convert domestic coal into boiler fuel, distillate heating oil, gasoline, other light refined liquid fuels and chemical feed-stocks. The ERDA strategy is to support a number of liquefaction processes at one time through the pilot plant stage. The variety of coals to be processed coupled with the requirements for a wide range of fuels will necessitate commercialization of a number of liquefaction processes.

PROBLEMS:

1. Needed doubling in 10 years of coal output and the start of a shale industry will present problems.

2. Local population concentrations and amenities will rarely be adequate to support the labor requirements of operating mines and conversion plants.

PROJECT	STATUS
N.E. WASHINGTON, TERTIARY ROCKS (3 reports)	OPEN FILED
WESTERN SNAKE RIVER BASIN, IDAHO	COMPLETED
S.W. MONTANA TERTIARY BASINS	IN PROGRESS
BIG MEADOW, IDAHO	COMPLETED
BOULDER BATHOLITY, MONTANA (P)	IN PROGRESS
LATAH FORMATION, WASHINGTON (P)	IN PROGRESS
SOUTHEASTERN OREGON (P)	IN PROGRESS
OWENS VALLEY, CALIFORNIA	OPEN FILED
HALLELUJAH JUNCTION, NEVADA-CALIFORNIA	COMPLETED
BASIN & RANGE LOW GRADE (P)	IN PROGRESS
JUAB COUNTRY, UTAH (P)	IN PROGRESS
NORTHERN POWDER RIVER BASIN, WYOMING-MONTANA	COMPLETED
NORTHERN GREEN RIVER BASIN, WYOMING	COMPLETED
BIG HORN BASIN, WYOMING-MONTANA (P)	IN PROGRESS
EASTERN NORTH DAKOTA (P)	IN PROGRESS
NORTHERN BLACK HILLS (P)	IN PROGRESS
CORTEZ AREA, COLORADO-UTAH	OPEN FILED
SOUTH PARK, COLORADO (2 reports)	COMPLETED
SAN RAFAEL SWELL, UTAH	IN PROGRESS
BRUSHY BASIN LOW GRADE, UTAH (P)	IN PROGRESS
GUNNISON, COLORADO (P)	IN PROGRESS
KAIPAROWITS PLATEAU, UTAH (P)	IN PROGRESS
SAN JUAN BASIN, COLORADO-NEW MEXICO	OPEN FILED
HIGH PLAINS, NEW MEXICO-TEXAS	COMPLETED
JEMEZ MOUNTAINS, NEW MEXICO (P)	IN PROGRESS
LAW VEGAS BASIN, NEW MEXICO (P)	IN PROGRESS
SE ARIZONA AIRBORNE GROUND FOLLOWUP	IN PROGRESS

TABLE 6 ACTIVE HIGH BTU GAS FROM COAL PROJECTS*

Company	Location	Status
Western Coal Gasification Co.	New Mexico, Public Land	Federal Power Commission has issued opinion approving project with certain qualifications. The company has requested a cost of service authorization.
Michigan-Wisconsin Pipeline Co.	North Dakota, Private Land	Application filed with Federal Power Commission, March 1975. Lignite reserves of 3.7 billion tons dedicated to project by North American Coal Corp. Four plants planned. North Dakota has awarded conditional water permit.
El Paso Natural Gas	New Mexico, Public Land	Application before Federal Power Commission. Company has asked FPC to defer decision. Coal lease on Navajo Indian Reservation. Water application filed but not approved.
Panhandle Eastern Pipeline Co.	Wyoming, Private Land	Planning and design. Peabody Coal Co. has dedicated in excess of 500 million tons of coal. State has issued water permit.
Natural Gas Pipeline Co. of America	North Dakota, Largely private Land	Detail planning. Rights to 2.1 billion tons of lignite leased. Application for water submitted to North Dakota. Plans for eventual 4 plants with 250 million scf/d capacity each.
Cities Service Gas Northern Natural Gas	Montana-Wyoming	Study of coal gasification in Powder River Basin. Up to 1,000 million scf/d in four plants. Peabody Coal Co. has dedicated 500 million tons of coal.

*All projects involve surface mine development and contemplate the use of the Lurgi Coal gasification system followed by methanation to about 1,000 BTU'S per standard cubic foot. See Volume III, Chapter III-E for details.

There will be a major influx of skilled and unskilled workers into remote areas creating an instant need for roads, schools, housing, etc.

3. Massive capital investment will be needed for mines and conversion facilities. While energy demand and the financial needs to meet it grows exponentially, these new technologies require much higher investments per unit of net energy output, thus sharply increasing capital needs.

ENVIRONMENTAL CONCERNS:

1. Water resource requirements and priorities are problems generic to coal conversion.

2. Development of control technologies may be required for any newly identified air and water pollutants or potential health hazards.

3. Environmental control problems for liquefaction processes could be severe because of combustion/disposal problems resulting from higher levels of aromatic compounds, and the occurrence of a wide variety of trace elements in the process residues with possible toxicity problems still to be defined.

Areas Undergoing Immediate Impact:

Cattleburg, Kentucky - 600 T/D Ebullated Bed Direct Hydrogenation H-Coal Pilot Plant.

Pittsburgh, Pennsylvania - 10 T/D Fixed Bed Direct Hydrogenation Synthoil Process Development Unit.

Cresap, West Virginia - Engineering Test Site.

2. Low BTU Gasification

ERDA's Objective: To provide the technologies required for the construction of domestic coal resources to environmentally acceptable low BTU gas for:

a. electric power generation including combined cycle systems.

b. industrial and process heat applications.

c. chemical feedstocks.

To provide for the transfer of technology resulting from this program to commercial users of existing gasification systems.

PROBLEMS: Same as 2 and 3 of liquefaction.

ENVIRONMENTAL CONCERNS

1. Techniques for the control of trace elements and fine particulate emissions from end usage devices need to be developed.

2. Land use, reclamation and water resource requirements are problem areas generic to coal conversion.

3. Problems of scale will be encountered when increasing size from small demonstrations to full-scale commercial application.

3. HIGH BTU GASIFICATION

ERDA's objective is to convert economically all ranks of coal to substitute natural gas and to increase the efficiency and reliability of the processes used. The high Btu substitute natural gas generated by the gasification of coal will be used by high priority consumers of natural gas. Such use will extend the period over which this high quality energy source will be available to meet consumer demand.

PROBLEMS: Same as Liquefaction.

Environmental Concerns

1. Water resource requirements and priorities are problems generic to coal conversion.

2. Potential pollutant and safety problems will have to be characterized for both long-range and short-range impacts.

3. Magnification of environmental problems due entirely to large size of commercial high BTU coal gasification plants. Effects of current pilot plants are insignificant. Commercial size plants however will have appreciable effect on land-use, resources, regional economics, wastes, etc.

4. Magnetohydrodynamics

The MHD power system program emphasizes the development of electrical, utility-sized power generation systems, utilizing coal as the primary fuel. When combined with bottoming steam systems, MHD offers greater potential for significant improvements in overall power system thermal efficiencies than any advanced power cycles.

The ERDA objective is to design and test (MHD) componenets and sub-systems, and to integrate these into system tests to be conducted in pilot scale Engineering Test Facilities.

PROBLEMS

1. As a new technological construct, MHD will have to demonstrate economic feasibility prior to the generation of significant interest on the part of the industry.

2. Demographic problems are likely to arise from the influx skilled and unskilled workers into remote areas to support the labor - and facilities - requirements of operating plants.

Environmental Concerns

The problems of conventional plants in water use and in solid waste generation and disposal are still present in MHD plants, but because of the higher plant efficiency, are lower per unit of electricity generated.

5. Direct Combustion

ERDA's objectives are to develop and demonstrate on a commercial scale, the technology for heat and power generation using fluidized bed combusters fueled by high-sulfur coals and coals of all ranks and qualities in an environmentally acceptable and economically attractive manner. To also develop and demonstrate on a commercial scale, coal oil slurry firing as a retrofit technique for existing industrial and utility oil fired combusters and to improve the reliability and efficiency of present boiler systems.

The ERDA strategy is to initiate a series of projects that will demonstrate fluidized bed combustion as an economic, practical and environmentally acceptable technique to use coal of all ranks, quality and sulfur content. This permits coal to replace oil and gas firing of utility and major industrial heat and steam plants. Coal-oil slurry and other combustion systems will be developed in conjunction with utilities, industrial and institutional users and equipment manufacturers. Reliability and efficiency data of present boiler systems will be compiled and analyzed so that improvements can be quantitatively assessed and evaluated.

PROBLEMS

2 and 3 of liquefaction.

Environmental Concerns

1. Extensive, multiple and fragmented permit and approved requirements for environment and safety have significant schedule and cost impacts.

2. Site selection procedures are not clearly defined. However, some guidelines are emerging, which will be supplemented to provide a comprehensive plan.

3. Procedures are being developed for coordinated actions of the legislative, regulatory and other political, institutional and environmental groups involved. However, the issues are broad and complex, and considerable work is yet to be done.

6. Advanced Research and Supporting Technology

ERDA's Objectives:

1. To discover and develop the materials and components that ensure reliable, efficient, and environmentally acceptable plants for coal conversion and combustion.

2. To discover technologies for improved direct utilization of coal.

3. To discover advanced processes for coal conversion to synthetic fuels.

4. To conduct systems analyses of processes and technologies to aid in the formulation of planning and policy options.

5. To increase the supply of personnel trained in fossil energy technologies from our Nation's university system.

Significant near term activites are underway to develop analytical techniques required for the measurement of environment and safety related trace contaminants. Additional data on coal chemistry and the characterization of products and by products from coal conversion processes are underway. Significant research activites are underway for stack gas cleanup studies to support expanded direct utilization of coal and low BTU gas from coal.

A broad research program on materials and components develops equipment which will function in an efficient, reliable and environmentally acceptable manner under the conditions required in a variety of coal conversion and utilization processes. These conditions include operation at high temperatures and pressures and under hostile erosive and corrosive conditions. Metallic alloys and ceramic materials will be tested for suitability. This research will lead to more durable heat exchangers, reduce fireside corrosion of boilers, and improved materials for construction of boilers, conversion reactors, gas turbines and magnetohydrodynamics (MHD) equipment.

Specific Environmental and Safety Aspects will include:

1. Development of methodology and planning tools for assessing environmental aspects of Fossil Energy technologies and demonstration projects.

7. <u>Demonstration Plants</u>

ERDA's objective is to validate the technical, economic and environmental acceptability of second generation coal processes by designing, building and operating near-commercial scale modules. To accelerate the commercialization of demonstrated technology by stimulating the building of special equipment and to demonstrate and support the transfer of advanced technologies to the commercial sector. The Federal program is based upon sharing demonstration plant project costs 50/50 with an

industrial partner, who has responsibility for selection of the process, plant size, site and coal type subject to Federal concurrence.

PROBLEMS

Successful integration of Federally encouraged energy resource development projects requires sensitivity to the impacts of industrial development in host communities.

1. Law, regulations and public attitudes in different states.

2. Public sector cash follow problems.

3. Changes in employment patterns.

4. Boom-town psychology and attendant social dislocations and land abuse.

Environmental Concerns

1. Techniques for controlling fine particulate matter and trace emissions are not known or are costly.

2. Water supply and quality control considerations in the western states could limit the choice of sites for demonstration plants.

3. The nature and volume of large plant waste products may require that new waste management techniques be developed.

Areas of Immediate Impact:

1. New Athens, Illinois - Clean Boiler Fuel Demonstration Plant. The objective of this plant is to define, establish and demonstrate the commercial potential and feasibility of the hydro-carbonization process for coal conversion. The hydrocarbonization process converts high-sulfur coals to liquid fuels, pipeline gas, anhydrous ammonia, and elemental sulfur.

2. Ft. Lewis, Washington SRC Pilot Plant

B. PETROLEUM AND NATURAL GAS

1. Gas and Oil Extraction

ERDA objective is to develop and demonstrate in cooperation with industry, enhanced recovery technologies which may increase production flow rates by 500,000 barrels/day of oil (1.0 quad yr.) and three billion cubic feet/day of natural gas (1.0 quad/yr.) and add two billion barrels of oil and ten trillion cubic feet of natural gas to domestic reserves.

The program has been designed to increase production of oil and gas from both onshore and offshore areas, including tar sands, through advanced exploration and extraction techniques. Program emphasis is on developing enhanced recovery techniques which could extend the supply of domestically available resources by approximately 10 years and on developing techniques required in hostile (arctic and outer continental shelf) environments.

PROBLEMS

1. The uncertainties of the final market price for oil produced by enhanced recovery methods makes it difficult to evaluate economic feasibility.

2. Chemicals and equipment may be in short supply and may not be available in the quantities required to support some of the enhanced processes being investigated.

Environmental Concerns

1. The actual impact of field injection on deep aquifilers and impacts on the prevailing geological structure (subsidence, movements along fault lines, etc.) are not entirely known.

2. Acceptable methods of brine disposal and prevention of damaging runoff or accidental discharge into surface waters of oil-rich chemicals associated with large-scale operations have not been established.

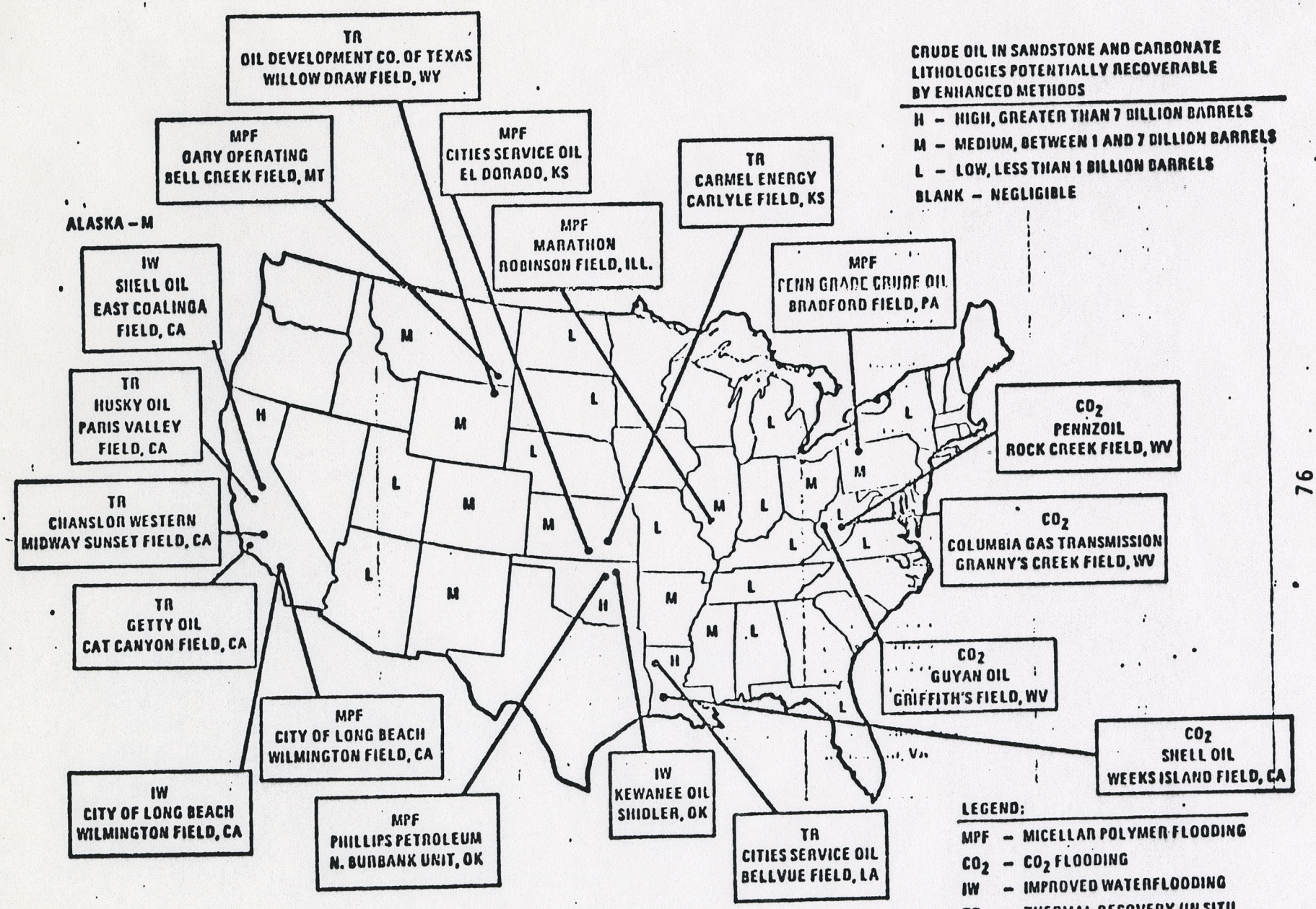
3. Oil spills resulting from offshore drilling and transportation.

Enhanced Oil Recovery

CURRENT MAJOR EOR CONTRACTS

PROGRAM	TOTAL FUNDING (MILLIONS)	GOVERNMENT CONTRIBUTION	PERFORMER	LOCATION	STATUS
MICELLAR-POLYMER FLOODING	13.1	5.4	CITIES SERVICE, INC.	EL DORADO, KS	MICELLAR INJECTING MAR 77
	9.8	3.4	PHILLIPS PETROLEUM CO.	BURBANK FIELD, OK	UNDER INJECTION
	4.2	2.2	PENN GRADE CRUDE OIL CO.	BRADFORD FIELD, PA	DRILLING WELLS
	5.0	2.5	GARY OPERATING CO.	BELL CREEK FIELD, MT } WILMINGTON FIELD, CA } ROBINSON FIELD, IL	LAB AND FIELD DESIGN
	7.0	3.5	CITY OF LONG BEACH		MICELLAR INJECTION
	44.0	14.0	MARATHON OIL CO.		
	0.4	0.4	SUNTECH	MARCUS HOOK, PA	NEW CONTRACT
CO_2 FLOODING	3.2	1.2	GUYAN OIL CO.	GRIFFITHS FIELD, WV	DRILLING COMPLETE
	0.9	0.9	PULLMAN KELLOGG	HOUSTON, TX	NEW CONTRACT
	1.4	0.6	COLUMBIA GAS TRANSMISSION CORP.	GRANNY'S CREEK FIELD, WV	INJECTING CO_2
	2.6	1.8	PENNZOIL CO.	ROCK CREEK FIELD, WV	INJECTING WATER
IMPROVED WATERFLOODING	3.0	1.2	KEWANEE OIL CO.	STANLEY STRINGER FIELD, OK	PRODUCING TERTIARY OIL
	7.5	2.2	SHELL OIL CO.	EAST COALING FIELD, CA	INJECTION TESTS
	14.0	5.6	CITY OF LONG BEACH	WILMINGTON FIELD, CA	LAB AND FIELD DESIGN
THERMAL RECOVERY	7.3	2.5	HUSKY OIL CO.	PARIS VALLEY FIELD, CA	INJECTING AIR
	0.8	0.7	CARMEL ENERGY CO.	CARLYLE FIELD, KS	INJECTING GAS AND STEAM
	8.7	2.0	GETTY OIL CO.	CAT CANYON FIELD, CA	NEW PROJECT
	8.2	3.1	CITIES SERVICE, INC.	BELLEVUE FIELD, LA	INJECTION TESTS
	8.2	1.7	CHANSLOR WESTERN CO.	MIDWAY SUNSET FIELD, CA	INJECTING STEAM
	1.3	0.6	OIL DEVELOPMENT CO. OF TEXAS	WILLOW DRAW FIELD, WY	UNDER INJECTION
	0.5	0.2	AEROSPACE CORP.	RICHMOND, VA	NEW CONTRACT

OF ERDA SELECTED CONTRACTS



Enhanced Gas Recovery

CURRENT MAJOR EGR CONTRACTS

PROGRAM	TOTAL FUNDING (MILLIONS)	GOVERNMENT CONTRIBUTION	PERFORMER	LOCATION	STATUS
MASSIVE HYDRAULIC FRACTURING	3.6	2.0	CER, INC.	RIO BLANCO CO., CO	FINAL TEST NOV 76
	4.3	2.1	COLUMBIA GAS SYSTEM, INC.	LINCOLN CO., WV	3 WELLS DRILLED; 3 OF 3 STIMULATIONS COMPLETE
	4.8	2.5	COLUMBIA GAS SYSTEM, INC.	OH, WV, VA, KY	NEW START
	7.0	2.2	GAS PRODUCING ENTERPRISE, INC.	NATURAL BUTTES, UT	2 WELLS STIMULATED; 10 REMAINING
	6.6	2.6	MOBIL OIL CORP.	PICEANCE CREEK, CO	DRILLING SPRING 77
	2.4	1.1	PACIFIC TRANSMISSION SUPPLY CO.	SAND RIDGE, UT	DRILLING OCT 76
	.8	.3	RIO BLANCO NATURAL GAS CO.	RIO BLANCO CO., CO	PRE-STIMULATION TESTING COMPLETE
	.8	.3	AUSTRAL OIL CO.	RIO BLANCO CO., CO	2 STIMULATIONS COMPLETE; PRODUCTION TESTING
	.9	.2	WESTERN OIL SHALE CORP.	UINTAH CO., UT	PRODUCTION TESTING
	.4	.2	DALLAS PRODUCTION, INC.	WISE CO., TX	PRODUCTION TESTING
CHEMICAL EXPLOSIVE FRACTURING	4.7	2.4	PETROLEUM TECHNOLOGY CORP. PETROLEUM TECHNOLOGY CORP. PETROLEUM TECHNOLOGY CORP.	1. PERRY, LESLIE, LETCHER COS., KY 2. SUTTON CO., TX 3. LINCOLN CO., WV	STIMULATION NOV 76
DEVIATED WELL TESTS	.8	.6	CONSOLIDATED GAS SUPPLY CORP.	JACKSON CO., WV	NEW CONTRACT

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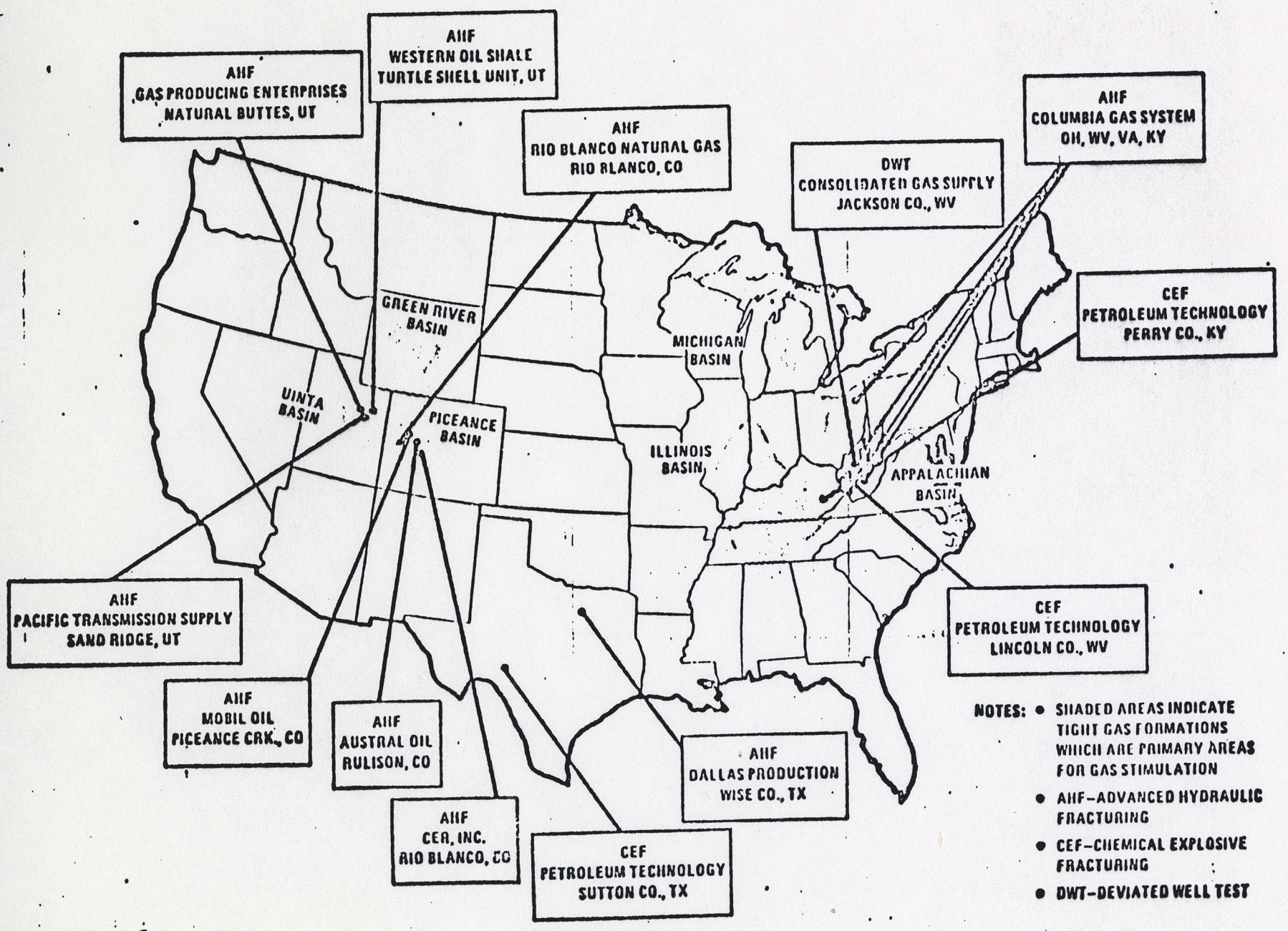
POTENTIAL AREAS FOR GAS STIMULATION AND LOCATIONS OF ERDA CONTRACTS



Petroleum and Natural Gas

2. Supporting Research

ERDA's objective is to develop and maintain a fundamental research technology in support of the gas and oil extraction program.

Five research projects are currently directed toward the characterization of petroleum and syntheic fossil fuels. Currently, three projects are directly concerned with the characterization of fuels. One project is concerned with the refining process technologies, and one project with the qualities of oil and identification of oil to determine the origin of oil spills. The bulk of the research is performed under the direction of the Bartlesville Energy Research Center. One characterization research project is performed under the direction of the Laramie Energy Research Center.

C. IN-SITU TECHNOLOGY

1. In-Situ Coal Gasification

ERDA's objective is to:

a. develop and demonstrate a commercial technology for converting coal in place into low and medium BTU gas.

b. to support the transfer of this technology into the commercial industrial sector through cooperative programs with industry.

c. to explore advanced concepts for producing a wider products range from a variety of coal resources.

An estimated 85% of the U.S. coal resources are presently not economically recoverable by conventional mining, however, much of this coal can be converted in place to other usable energy forms.

Problems

1. At present, the product price would be high compared to regulated gas prices. A pricing policy for in-situ gas which adequately relates the prices costs to the gas market does not exist.

2. Federal and state regulations have increased the time and costs of acquiring field sites.

3. The technical feasibility and economic practicability of power generation with low-Btu gas produced from UCG (underground coal gasification) need to be established.

4. The logistics of power generation with UCG, low BTU gas, power distribution and market demand need intensive study.

ENVIRONMENTAL CONCERNS

1. No clear method exists to prevent aquifier disruption and water quality reduction.

2. Surface subsidence in large-scale processing is not yet predictable.

3. Impact on water resources due to process sitting in arid regions is unknown.

IN-SITU TECHNOLOGY

2. Oil Shale

ERDA objective is to provide the technological base to support development of a commercial oil shale and gas industry; and to support oil and gas production research involving both true and in-situ and modified in-situ methods.

In order to develop a technology capable of improving total resource recovery and lowering environmental impacts, in-situ extraction techniques will be studied and developed. These techniques will be developed to exploit leaner and/or deeper deposits, thus offering a means of utilizing those deposits which present technology cannot. Several different in-situ recovery techniques are under investigation for application to various resource targets. This is done because no single in-situ process is considered applicable to all major types of oil shale deposits. Successful development of any one of these techniques will materially expand the recoverable resource relative to that available by conventional mining and surface processing.

TABLE 7 ACTIVE OIL SHALE PROJECTS*

Company	Project	Location	Process/size	Status
Colony Development Operations**	Underground mine surface retorting	Colorado, private land	TOSCO II/50,000 b/d	Plant designed, but project suspended indefinitely. Some development work proceeding
Gulf Oil and Standard Oil (Indiana)	Surface and/or underground mine, surface retorting	Colorado, public land (Tract C-a)***	TOSCO II/50,000 b/d	Pre-development studies underway
Atlantic Richfield, TOSCO, Ashland Oil, and Shell Oil	Underground mine, surface retort	Colorado, public land (Tract C-b)***	TOSCO II/50,000 b/d	Pre-development studies underway
White River Oil Shale Corporation****	Underground mine, surface retort	Utah, public land (Tract U-a and U-b)***	Paraho and TOSCO II/ 50,000 b/d	Pre-development studies underway
Superior Oil	Underground mine, surface retort (includes mineral recovery)	Colorado, private land	Rotating Grate Retort 44,000 b/d	Awaiting land exchange decision with Interior research continuing
Union Oil of California	Underground mine, surface retort	Colorado, private land	Steam-gas recirulation retort/50,000 b/d	Semi-works plant of 7,000 b/d being planned
Occidental Petroleum	Modified In Situ	Colorado, private land	Modified In Situ/ 33,000 b/d	Advanced stage of research

* Technology and status detailed in Volume III, Chapter III-C.
**Colony Development Operations consists of Atlantic Richfield, TOSCO, Ashland Oil, and Shell Oil.
***Part of the Department of the Interior's Prototype Oil Shale Leasing Program.
****Consists of: Sun Oil, Phillips Petroleum, and Standard Oil (Ohio).

Environmental Concerns

1. Modified in-situ processes will still require disposal of up to half as much mined rock or spent shale as conventional room-and-pillar mining and above ground processing.

2. The effects of in-situ fluids and potentially leachable trace elements on water supplies and vegetation are not fully understood.

3. Supporting Research

To provide test support, general support, and basic research necessary to develop and optimize processes and components for both above ground and in-situ oil shale projects.

Oil shale supporting research is conducted by the Laramie ERC (Energy Research Center) with additional work performed by universities. Four primary task areas have been identified to implement the strategy.

1. Production of Clean Fuels is concerned with developing improved hydrogen processing and the associated techniques for producing clean liquid gaseous fuels from crude shale oil and its associated functions especially those produced by, but not limited to, in-situ retorting.

2. ERDA personnel observe surface retorting proceedings and tasks at the Anvil Points, Colorado facility. This project, presently being funded by private industry, will eventually publish results to develop a new aboveground retorting process. The results which will be disseminated in accordance with terms of the lease agreement, will be based on independent government analysis of the raw data.

3. The New Process Technology task is devoted to new oil shale process technology and is investigating techniques for increasing the solubility of oil shale kerogen and to develop the basis for economic and technologic assessment of oxidative upgrading of fossil fuels. The research on kerogen solubilization may lead to a second-generation technology for above-ground processing that does not require retorting. Oxidative upgrading of shale oil may improve economics through reducing hydrogenation

requirements for removing sulfur and nitrogen compounds.

4. The fourth task involves the characterization of oil shale, to aid in site selection and to assist process design, control and evaluation. Oil shale cores are taken for all on-going field projects and analyzed. Approximately 20,000 samples per year are characterized.

D. SOLAR

1. Solar Thermal Energy

ERDA's objective is to assist industry in developing a technology which will allow for implementation by the mid-1980's of commercial solar thermal electric generating plants, and total energy systems which make use of both electric and thermal output.

To demonstrate the technology for central receiver, distributed collector and other solar concepts through operation of plants such as the 10 MW central receiver pilot plant now in design.

Early demonstration will be undertaken to enhance public and user familiarity with and acceptance of these systems. Industry, including public utilities as well as manufacturers, will be involved in the planning and implementation of the program either by contract or by joint participation. This will facilitate the spread of this technology and also insure that the needs of industry are satisfied.

Problems:

The following considerations may limit the utilization of solar thermal electric systems:

1. Large land area use.
2. Competing land use.
3. High capital cost.
4. Aesthetics.

Total energy systems will require stand-by assistance from utilities. The principal consideration which may limit total energy systems are:

1. Ability of utilities to recover costs associated with providing stand by capacity.

2. High capital cost.

3. High labor cost to operate a small plant.

Environmental Concerns

1. Effect of shielding of large land area.

2. Local heat rejection.

3. Aesthetics

2. Agricultural and Industrial Process Heat

ERDA's objective in the Agricultural area is to develop and demonstrate a solar energy technology for the drying of grains and crops and the heating of animal shelters and greenhouse structures. The stimulation of commercial development could substantially reduce U.S. consumption of fossil fuels for these pruposes.

In the area of Industrial Process Heat, ERDA's emphasis is on encouraging the application of applying solar state-of-the-art components and technology to industrial processes to reduce U.S. consumption of fossil fuels. To help develop commercially viable industrial process hot water and drying/dehydration systems. By 1985, solar energy systems may supply about 0.1 quad/yr. or about 0.2% of the energy needed for industrial process heat.

PROBLEMS

1. Application of agricultural and industrial process heat systems may have a significant impact on utility and rate structures, but the extent is not known.

2. There is no precedent by which to decide jurisdictional responsibility of different trades for the installation and operation of solar systems.

3. Legislation concerning sun-rights may become necessary to protect large capital investments in solar rays from becoming shadowed.

Environmental Concerns:

As the use of conventional fuels becomes more costly due to non-availability or environmental control, industry may tend to migrate to regions of high solar flux. Consequently, an increased demand for arid land and scarce water resources may occur, having a moderate to major environmental and social impact.

SOLAR ENERGY

3. Wind Energy

ERDA's objective is to advance through research, development, tests and demonstrations, the technologies necessary for implementation by the mid-1980's of commercial Wind Energy Conversion (WEC) systems.

The general strategy of the WEC program is to advance the development of WEC technology and performance, stimulate industrial efforts to lower the production cost of WEC units through the use of prefabrication and production techniques, and accelerate, through demonstrations, the application and integration of reliable, economically viable wind energy systems capable of rapid commercial implementation. This will require the early involvement of potential manufacturers and users to ensure the definition of proper requirements and facilitate the application of WEC systems.

Problems

1. Understanding of possible legal and regulatory questions, such as "wind-rights" is inadequate.

2. Uncertainties in the availability of sufficient investment capital and experienced personnel may limit the growth rate of WEC in the near and mid-terms.

3. Public utilities will have limited confidence in large scale WECS systems due to lack of experience and the systems intermittant operational characteristic until sufficient testing is accomplished.

Environmental Concerns

1. While wind energy is generally considered environmentally benign, insufficient information exists

on possible environmental effects of large multi-unit systems, such as possible radio and television interference caused by large rotating blades.

2. There are also uncertainties about the public acceptability of large numbers of WEC units, particularly in the heavily populated areas, and about the aesthetics of such units in locations such as scenic shorelines or mountain tops.

3. Effects on birds and wildlife is not yet known.

SOLAR

4. Photovoltaic Energy

ERDA's objectives are to assist industry in the development of lowcost solar photvoltaic conversion (SPC) system for future implementation by industry and utilities and to encourage application of technologies which could result in commercially generating savings of 0.5 to 1.6 x 10^9 $KW_e h$ annually, or from 1-3 million barrels of petroleum per year.

The central element of this strategy in this program is to lower the cost of collector arrays by a factor of 50 to 100 from present levels. This will be done through R and D on production of low-cost photovoltaic materials, large-area crystal growth high volume sheet production materials and techniques for array encapsulation, improved cell and array designs and high-volumes, cost-effective, automated assembly techniques.

Problems

1. To substitute SPC systems for existing means of electrical power generation, utilities, industry and home owners will need to be convinced of the technical and economic feasibility and reliability of these systems.

2. A systematic effort by the private sector to stimlate and motivate these groups will be required to assure the market penetration required to meet the objectives of this program.

3. Possible constraints to rapid system implementation include the availability of investment capital manpower and material resources, and the long-term assured markets needed to justify private investment.

4. Other problems include the ownership and protection of sun-rights and the union jurisdictions in the installation of solar cells on roofs.

Environmental Concerns

1. The principal environmental problems foreseen for SPC systems are land requirements and the possible ecological impacts and altered albedo produced by the large arrays needed for required power production. Some future systems may use toxic materials which could be dangerous if released into the environment. Studies of these possible environmental impacts are planned, as are studies of the possible impacts of a major new manufacturing industry.

2. As the use of conventional fuels becomes more costly due to non-availability or environmental control, industry may tend to migrate to regions of high solar flux. Consequently, an increased demand for arid land and scarce water resources may occur, having a moderate to major environmental and social impact.

SOLAR ENERGY

5. Ocean Thermal Energy

ERDA's objective is to develop a technology for demonstrating the technical and economic feasibility of commercial offshore power plants capable of economically converting ocean thermal energy into substantial quantities of usable electrical energy and/or other energy products such as hydrogen.

PROBLEMS

1. There is a need to resolve international law of the sea aspects of OTEC implementation.

2. Other institutional problems such as security of the plant, wtc, are currently being identified.

Environmental Concerns

1. There is a need to predict definitely the possible environmental impacts caused by large-volume warm and cold water mixing on the ocean, biota, and climate. There are indications that the dispersion

of the nutrients from the cold water discharge could be beneficial in providing a potential for open-ocean mariculture.

2. There is a need to examine possible environmental effects of techniques considered to inhibit biofouling and/or corrosion.

3. There is a need to address possible consequences of chemical/industrial processing operations, and of the installation and operation of electrical distribution systems.

4. There is a need for an evaluation of possible impacts of coastal zone facilities associated with the operation of offshore OTEC power plants.

SOLAR

6. Solar Heating and Cooling of Buildings

ERDA's objectives in this area are:

1. To establish through a demonstration program the overall performance of numerous types of solar heating by the end of 1977, and of combined heating and cooling systems by the end of 1979, in a wide variety of new and retrofitted buildings in all the climatic regions of the U.S.

2. To encourage the development of an industry with the capability for product development, production, distribution, installation and servicing of solar heating, cooling and hot water systems, which could develop and serve a growing market. This could lead to projected savings of about 0.2 quad/yr. of fuel consumption by 1985.

3. To develop new technologies that will improve component and system performance, reduce costs, improve component durability and system reliability, and lead to more cost-effective systems for a broader range of applications. Special emphasis will be place on development of retrofit systems and on new approaches to solar cooling.

4. To encourage the private sector in its commercialization efforts through initiation in calender year 1976 of a data bank and mechanisms for collection and dissemination of information on solar heating and cooling.

Problems

1. Valid economic data for lenders, builders and buyers are not currently available and must be developed.

2. Solutions to jurisdictional problems arising out of the use of solar energy for the heating and cooling of buildings are not available and must be developed.

3. Policies on sun-rights must be established.

4. More extensive design and environmental data must be generated.

5. Future role of utilities has not been adequately assessed.

Innovative techniques will be needed to solve the problems of load management and peak demand. The possibility of utility ownership as a means of overcoming acquisition costs should be investigated.

Environmental Concerns

Some of the more efficient fluids proposed for use in heat transfer, heat storage, or refrigeration have various degrees of toxicity. The potential for release of such toxic fluids from residential or commercial systems, either by accident or through normal maintenance, must be reduced by utilizing materials equipment, and operational and maintenance procedures which are essentially fail-safe, or by developing efficient nontoxic fluids.

E. GEOTHERMAL ENERGY EXECUTIVE SUMMARY

ERDA's general objective is to provide the nation with an economically and environmentally acceptable energy resource option which could permit the timely exploitation of our nation's geothermal energy resources, primarily by industry or municipal utilities. These resources exist in a variety of forms: dry steam, hot water, geopressured water, hot dry rock, thermal gradients in the earth's crust and magma. The latest assessment of the nation's geothermal resources (USGS Circular #726, 1975) estimates a total energy content in the first types in excess of 400,000 quads; the energy content of the latter two is, in theory, almost

limitless. Presently, however, they pose too many technical and economic difficulties for exploitation in the immediately foreseeable future.

Because commercial-scale development of geothermal resources will be strongly influenced by regional and local factors, the Federal government will work closely with state and local governments, industry, municipal authorities, and environmental and other interest groups in identifying appropriate Federal initiatives that would most effectively encourage investment in geothermal energy and public acceptance of its development.

PROBLEMS

1. Commercial development is allegedly being delayed by the lack of economic parity between the development of other energy (e.g. coak, uranium, oil, gas, etc.) This alleged disincentive is the non-parity of geothermal resources, verses fossil resources with respect to the write-off of intangible drilling costs and depletion allowances.

2. The nature and magnitude of the expected environmental impacts, some apparently minimal and some potentially serious, differ from one type of geothermal resource to another, and even within a single type of resource or within a single known Geothermal Resource Area. For example, the dissolved gas and mineral content of hydrothermal fluids varies considerably. Thus the technology or magnitude of any remedial measures required will vary from one site to another, as well as from the type of resource to another.

III. MARKETING, PRICING, SUPPLY & DEMAND INFORMATION

A. SOLAR: Information Dissemination and Commercialization

ERDA's objective is to develop solar energy data in support of all solar energy R, D, & D areas, and to facilitate an effective commercialization program for solar options in coordination with technical program management.

The ERDA strategy is to effect the timely transfer of RD & D results to researchers, users and industry. All information and transfer activities will focus on the stimulation of solar technology programs toward rapid commercialization. These information and transfer activities will utilize commercial sector avenues

(trade associations, manufacturers, professional publications, marketing organizations, media). The program will provide analysis of mechanisms (incentives and barrier removal) to accelerate the growth of a solar energy industry. Active incentive programs will be considered in conjunction with regional development efforts.

Implementation of the Information Dissemination technology transfer program has already begun through activities such as solar demonstrations seminars, workshops, document distribution, seed projects in cooperation with commercial interests (utilities, manufacturers, etc.)

Problems

Available information does not facilitate practical analysis of the solar technologies, their potential, their cost, and development time frame. Institutional barriers to speed implementation exists in finance construction, aesthetics, local and state government codes, etc. The demand for answers must await facts from the technical program before definite commercialization can occur.

B. Technical Information Services

Objective:

To continue to advance energy research and development through the timely dissemination of technical information and current, accurate energy resources data in useful form to the energy RD & D communities; and to foster prompt application and commercialization of new energy technologies by communicating RD & D results to industrial and other potential users.

Strategy

Collect, analyze, organize, publish and disseminate scientific and technical information related to energy RD & D. Develop information services in collaboration with RD & D program managers and utilize external sources of information and services to meet governmental agencies needs. Coordinate services with other public agencies and private organizations to minimize duplication and assure effective service. Manage and integrate research information on environmental control and effects of energy technology systems.

Federal Role

The government must assure that scientific and technical information of the development of energy resource type and extent, and its efficient extraction, conversion, transmission, and use is collected organized and disseminated, so as to foster scientific and industrial progress and public understanding of energy resource and technology options.

International Cooperation

International Cooperation is being expanded through bilateral arrangements with other countries and information sharing agreements with international organizations, e.g. the International Energy Agency (IEA) and the International Atomic Energy Agency (IAEA). The U.S. represented by ERDA, is a full participant in and beneficiary of IEA's International Nuclear Information System (INIS). Under an agreement with IEA, a World Coal Resources and Reserves Data Bank Service is operated jointly by the U.S. Geological Survey and the British National Coal Board. Also, under NATO, cooperative arrangement are being made to exchange energy conservation, solar and geothermal energy information.

Program Implementation

Energy RD & D programs are supported through:

1. Development and maintenance of comprehensive information resources for use by Federal, state and local agencies and institutions, the private sector, etc.

2. Direct service to producers and consumers of technical information when the information resources and services are not provided by the private sector.

Basic Resource Development and Support Functions Include:

1. Acquiring, organizing, indexing, and abstracting current research in progress and technical literature covering energy R & D and compiling a standardized data base in machine-readable form.

2. Identification, inventoring, compilation, and

development of banks of significant physical and technical data together with means of machine exploitation.

3. Development of standard procedures for timely reporting of RD & D results.

The commercialization and application of energy technology is supported by:

1. Identifying, reporting and disseminating information on energy technologies.

2. Identifying user communities supporting workshops and conferences and developing special publications tailored to their needs.

DEPARTMENT OF INTERIOR

The U.S. Fish and Wildlife Service (FWS) began operating the National Fish and Wildlife Information Transfer Network in FY 1975. The purpose of the Network is to obtain access to existing data and information systems, support research activities, and transmit data and other information to appropriate points within the Dept. of Interior and outside users.

U.S. Geological Survey (USGS) has developed and is maintaining the following data bases:

1. The Petroleum Data System contains 66,000 oil and gas pool records covering location, geology, reservoir engineering and fluids. Digitizing oil field outlines is presently in process. The system is on-line at the University of Oklahoma on a Time Sharing Option available to all users.

2. The American Petroleum Institute/American Association of Petroleum Geologists Well Data System is operational. All exploratory wells from 1954 to the present and all production wells from 1966 to the present are included. Records also include location, status, and classification of wells. Used only by government agencies.

3. The Well History Control System contains about 600,000 well records, each detailed as to location, drilling status, texts, geological data and owner. Used only by governmental agencies.

4. The National Coal Resource Data System contains 12,000 area data entries, 7,000 point-data entries from current coal mapping, and 6,000 geochemical analyses. The system is being built with cooperation of state agencies. Phase I contains data by country and is being prepared for all users. Phase II which contains disaggregated point data will be made available to all users when the file size warrants.

5. The Oil Shale Data Analysis Program contains 80,000 data bank entries for preparation of computer-generated resource maps. Presently restricted to government users.

6. The Geothermal Resources File contains 140 data bank entries. File build-up is beginning and is presently restricted to participating users. The scope of the file build-up is beginning and is presently restricted to participating users. The scope of the file is international.

USGS plays an aggressive role in the coordination of its data collection and systems development activities with the activities of other Federal agencies. Through joint agreements with the Bureau of Mines, Forest Service, Bureau of Land Management and TVA, the Survey is intergrating its resource data with economic production, reserve and resource data to provide a comprehensive basis upon which future resource exploitation and land use policy decisions will be made. Coal resource data are obtained in part through cooperative arrangements with the State geological surveys, which also are among the principal users of data compilations.

C. General Systems Studies

Objective: To provide the data, analysis, and documentation required and to develop the techniques to support national energy RD & D planning, decision-making, resource allocation, assessment and program evaluation activities.

Strategy:

Develop on an agency-wide basis the analysis, program planning, resource allocation, evaluation and documentation system which can provide for uniformity and comparability in assessing energy-related activities. Conduct studies using existing methodology and tools

as support for agency-level decision-making activities. Collect and develop accurate, current and appropriate detailed data, new models and analytic resources necessary to reflect changes (economic, social, political) in the operating environment and technological state-of-the-art.

Use universities, non-profit organizations and industry when special capabilities are required which are not available within the federal community.

Federal Role:

The federal government performs systems studies to determine the implementation of policy alternatives in managing energy technology development programs and to provide the public with a national perspective and unbiased approach to the energy problem. The systems effort is critical because of the complex interdependency inherent to energy and the national economy.

Program Implementation:

U.S. Department of Agriculture (DOA)

The Purpose of the DOA's program is to determine:

1. The energy flow in the food, fiber and forest products systems.

2. Effects of alternative energy availabilities and prices in the food and fiber system and the relationship with the rest of the economy.

Energy Research and Development Administration:

ERDA maintains and improves the following analytical tools on a continous basis:

1. Energy/Economic/Environmental Modeling and Inter-fuel Substitution Studies which evaluate responses to alternative policies and RD & D efforts, and project energy supplies and demands by end use under a number of alternative policy scenarios. Specific on-going projects include energy systems analysis and technology assessment, an energy model data base, and an electricity supply-demand model.

2. Impact studies to examine the underlying causal factors and the magnitude of response to changes in these factors as they relate to energy supply technologies, energy demand patterns, and the effects of RD & D spending on economic lifestyles, helping to understand the socio-economic reactions to new energy development. Existing energy systems models can only provide rough estimates of some of these important impacts. Specific plans for significant improvements include development of an analytical model for assessing inflationary impacts, analytical tools to disaggregate environmental impact information generated by existing systems models, and an analytical framework for assessing social costs and benefits of program implementation.

3. Regional Studies to define those actions that can be implemented uniformly across the country versus actions that should take distinguishing regional characteristics into account. The projects include development of a methodology for consistent regional studies and some actual studies and analysis as related to energy and environmental options. Appropriate regional groups will participate in this activity.

4. Constraint Analysis to assess potential problems of other resource inputs associated with energy technology implementation and create data bases of resource requirements including capital, manpower, materials and equipment. The existing constraints model will be extended to include additional types of energy facilities and to account for additional materials impacts. It will be complemented by a parallel resource availability study.

5. Venture Analysis which define the generic conditions for commercialization of developing energy technologies and provide a consistent evaluation of the social return that can be captured from a contemplated technological development, the probability that the private sector will develop the technology spontaneously, the government role required and the ERDA role required. The studies should provide a commensurable basis to be used for establishing energy item priorities.

6. Major end use markets studies to:

   (1) Assess the market potential for the technologies being developed by ERDA;

   (2) Determine program requirements for commercialization of these technologies; and

   (3) Establish a fact base concerning technology tradeoffs for a given end use to strengthen integrated ERDA program response to specific market needs. The market studies currently underway or being initiated in FY 1976 cover electric utilities (preliminary study completed) gas utilities, buildings, industry, and transportation.

IV. MINING ECONOMICS, MINING ENGINEERING, AND GEOLOGICAL INFORMATION

Although ERDA operates no specific programs in these areas, within ERDA programs there exists a great deal of in-house expertise which could be quite useful to tribes in evaluating deposits and determing the costs and benefits of mining. For instance, in the National Uranium Resource Evaluation, ERDA works with consultants and has employees who regularly evaluate mining potential and economics. They regularly compute mining costs for certain types of deposits and also are engaged in new research and operational methods in these areas.

V. IMPACT ANALYSIS AND TECHNOLOGY ASSESSMENT

A. GEOTHERMAL ENERGY: Environmental Control and Institutional Studies.

ERDA's objectives are to:

1. Acquire the data base needed for the development of environmental standards.

2. Develop appropriate environmental control

3. Formulate policy options for systematic elimination of non-technological impediments to geothermal resource development.

PROBLEMS

1. Present federal and state tax policies on geothermal development and energy production have been cited as inhibiting development.

2. Current federal, state and country regulatory and licensing procedures are lengthy, complex, cumbersome, and often inconsistent.

3. Possible adverse socio-economic impacts of geothermal development have not been adequately assessed.

4. State electric utility rate regulations do not normally allow full inclusion of geothermal development costs in rate base computations.

5. Differing investment practices between utility companies and resource development companies amplify the difficulties in obtaining capital for geothermal projects.

ENVIRONMENTAL CONCERNS

1. Insufficient knowledge of environmental effects of extensive and large-scale geothermal development. This lack of knowledge makes it very difficult to establish appropriate and effective environmental standards and regulations.

2. Gaseous emissions and land subsidence are the main known problems in geothermal reservoir utilization.

3. Biological effects are the major unknowns but they appear to be few and controllable.

4. The possibility of unduced seismicity from large-scale geothermal sites is not adequately understood.

5. Limited baseline data for many resource areas.

6. Technologies for the control of geothermal wastes in an environmentally safe manner without disruption to local land and water use are yet to be fully developed and demonstrated.

B. SOLAR: Environmental and Resource Assessment

ERDA's objectives are to:

1. Collect and standardize existing solar resources (insulation, wind and ocean thermal) data.

2. To coordinate collection, preservation and dissemination of data on a nationwide basis.

3. To perform environmental and technology assessments of each solar energy, technology.

4. To identify potential social-environmental problems early in the technology R & D cycle.

ERDA's strategy would be to provide the required data on a standardized basis by implementation of a federal network of isolation, wind and ocean thermal measuring stations. Alternative strategy would be to find civilian societies and/or industry to collect the data. While extensive use will be made of existing monitoring stations, the addition of new measurements to the current capability will be required as well as a number of new data gathering points. A central resource data exchange will be fostered through government private cooperation.

C. NUCLEAR: Materials Security and Safeguards

ERDA's Objectives are:

a. To protect the public against death, injury, or property damage from nuclear events produced by malevolent use of nuclear materials or sabotage

of nuclear facilities. To develop, demonstrate, assess and assure the availability of effective safeguards systems.

b. To assist the International Atomic Energy Agency (IAEA) in its safeguards role in guarding against the proliferation of nuclear explosive devices and defining effective safeguard systems (internal control and physical protection) in conjunction with efforts of foreign nations for guarding against domestic threats to nuclear materials and facilities.

ERDA is presently working on:

1. The definition of threat situations which safeguard systems should counter.

2. The development of the capability to evaluate safeguard systems.

3. The implementation of safeguards for ERDA materials in facilities/transit.

4. The development of safeguards programs for fuel cycles.

5. Cooperation with others.

PROBLEMS

1. Ensuring a parity of criteria among those agencies responsible for establishing requirements for the safeguarding and security of nuclear materials and facilities.

The Nuclear Regulatory Commission is also involved in response to the following functional needs:

1. A capability for assessing the effectiveness and socio-economic impact of safeguards policy options and alternative national strategies or procedures, including the choice of structure objectives and performance criteria for the overall safeguard systems.

2. A capability for assessing alternative physical protection and materials control and accounting criteria in terms of the detailed requirements to to be established in the regulations.

3. A capability for assessing the effectiveness of license safeguards, as designs proposed in license applications (license review) and as operating systems (inspections.)

4. A capability for measuring the performance characteristics of sub-system components.

NUCLEAR

2. Waste Management (Commercial)

ERDA's Objective:

1. To demonstrate the technology required for processing, storage, and management of radio-active wastes as early as possible in order to assure the safe and environmentally sound expansion of nuclear power.

2. To design, build, and operate the facilities required for storage and permanent isolation of commercially generated radio-active wastes where federal custody is required.

3. To perform the necessary confirmatory research and development to provide a sound technical basis for regulation of the handling and disposition of wastes from the processing and use of nuclear fuels (NRC) Nuclear Regulatory Commission.

4. To evaluate the environmental geologic adequacy and integrity of land-fill sites for lowlevel radioactive waste disposal (DOI).

5. To determine mechanisms and methods of radio-active release and migration (DOI) Dept. of Interior.

6. To develop geologic and environmental criteria for lowlevel radioactive waste disposal methods. (DOI)

PROBLEMS

1. Government-industry cooperative arrangements are needed to demonstrate and promote adoption of required techniques of waste treatment.

2. There are no detailed specifications for the characteristics of radioactive wastes or their packaging for delivery to the Federal repositories.

3. Public and local governments acceptance of radioactive waste disposal concepts and operations which is essential, is often difficult to achieve.

Environmental Concerns

Radioactive waste storage and/or isolation sites require careful site selection to prevent possible contamination and exposure of the population and surrounding environment. Site specific environmental impact statement will have to be prepared to detail the likely impacts and how they differ at proposed sites.

D. ENVIRONMENTAL CONTROL TECHNOLOGY

ERDA's Objective is assessment of technology for the control of emissions and discharges, the management and disposal of wastes, and the mitigation of environmetal impacts from energy systems, the transportation of energy materials, and the disposition of surplus radioactively-contaminated ERDA facilities; and assurance that these tasks are accomplished in compliance with environmental and social acceptability criteria.

PROBLEMS

1. Control capability and system tradeoffs associated with contamination and consumptive use of water, land reclamation, solid waste disposal, toxic trace elements and process heat rejection need to be identified.

2. A comprehensive study of the state of technology for the prevention, containment and cleanup of oil spills is required.

3. To conserve and recycle scarce or valuable resources, methods and criteria must be developed for their radioactive decontamination.

4. Transportation systems and technology may be inadequate to meet expanding needs for transport of fuels and waste materials associated with energy production in an environmentally and publicly acceptable manner.

5. Methods for volume reduction of radioactive wastes must be developed.

E. Biomedical and Environmental Research Program

Objectives:

1. To ensure that the national goal of increasing domestic energy production is achieved with minimal adverse impact on man and his environment.

2. To develop and integrate health, biological physical, environmental and socio-economic data in order to provide timely information for decision making.

3. To perform research needed to determine the adverse effects of energy technologies and to identify methods of mitigating or eliminating these adverse effects.

4. To provide the ERDA Program Offices, responsible for the development of energy production technologies, with the information and support needed to ensure environmental acceptability during the development and ultimate commercialization of the technologies.

5. To provide a basis for informed public judgement of the environmental costs, risks and benefit trade-offs involved in the development of energy resources and production technologies.

The Major Studies Are:

1. Health Studies Research provides qualitiative health effects data using human clinical and epidmiological studies, and using studies with well controlled animal populations.

2. Biological Studies are closely related to and support health studies, but are more fundamental in nature, examining basic mechanisms of life and of biological damage and repair.

3. Environmental Studies include land, fresh water, marine and atmospheric studies. These studies quantify environmental effects, providing the information necessary for cost and benefit analyses of energy choices. The research programs are geared to specific technological developments or specific problem areas associated with

current processes and operations.

4. Physical and Technical Studies include research into the physical and chemical mechanisms that underlie radiation and other pollutant interactions in biological and environmental systems. Also included are characterization, measurement and monitoring activities related to environment and health programs. These activities provide means and methods for supplying the basic information needed for health, biological and environmental studies.

5. Assessments are efforts to integrate and analyze environmental health and socio-economic data and current policies in order to supply decision makers in the federal and local governments as well as the general public, with information needed to evaluate the environmental acceptability of each ERDA technology.

XI. CERT TRIBES - INDIVIDUAL SUMMARIES

Acoma Pueblo
Keresan Tribe

Stanley Paytiamo, Governor
P.O. Box 309
Acomita, New Mexico 87049
(505) 552-6606 (08)

Area:	245,672	Acres	Population:	1,944
	245,346	Tribal	Labor Force:	840
	320	Allotted	Unemployment:	46%

Culturally:

Native religion is very influential and powerful in tribal life. A plains Indian tribe of the Keresan linguistic stock.

Government:

Originally, the government was controlled by the Caciques. The various functions of government, such as war and peace, witchcraft, hunting, husbandry and the like were regulated by representatives of the societies that pertained to that particular activity. However, with the advent of Spanish influence, the form of government was changed by establishment of a kind of electine system, and the control of strictly civil affairs was put in the hands of a governor, one or more lieutenant governors and a council.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	446		2,353
Moderate			175,472
Low			1,354

Agriculture:	65,559	Total Grazing Land
	65,339	Tribally Controlled
	320	Allotted
	175,474	Acres of Timberland Grazed
	1,806	Acres of Irrigated Land
	446	Acres Used Tribally
	1,306	Acres Idle
	2,500	Estimated Ultimate Irrigable Acres

Acoma (continued)

Agriculture Land Use (Irrigated Lands):

Use	Acres	Value	Use	Acres	Value
Cultivated Row Crops	81	$ 8,214	None		
Small Grains (close drilled)	1	$ 90	None		
Forage, Hay & Tame Pasture	286	$51,840	None		
Garden Crops	40	$ 5,280	None		

Land Use:

65,559	Open Grazing
320	Leased to non-Indians
12,019	Commerical Timber
165,098	Non-commercial Timber
882	Other

Business:

There are three small gorocery-confectionery establishments on the reservation owned and operated by the pueblo. There are also small roadside businesses along U.S. Highway 66. Major shopping centers are located in Grants, 15 miles to the west.

Timber:

177,117	Total Forest Acres
12,109	Commercial Forest Acres
90,951	MBF Timber Inventory
3,266	MBF Comm. Timber Inventory
560	MBF Annual Allowable Cut
720	MBF 1974 Cut by non-Indian Operators
80	MBF cut in 1975
$1,645	Value, all cut by non-Indians

Minerals:

Known major deposits of clay, obsidian, uranium, and coal. Additional mineral deposits include building stone, lava, and limestone, but these are not presently quarried. Uranium and coal are known to be present in large commercial quantities.

Recreation:

As one of the two oldest pueblos in this country, Acoma is a popular tourist attraction. Tribal members guide visitors on a tour of the pueblo, its old spanish mission and historical points of interest. The principal feast day is September 2, in honor of St. Stephen. 76 acres of lakes and ponds, 4 miles of streams. Visitor's center at Sky City.

Blackfeet Reservation
Blackfeet Tribe

Earl Old Person,
Chairman
Blackfeet Tribal Business Council
Browning, Montana 59417
(406) 338-5751

Area:	985,159		
	720,311	Tribal	
	264,848	Allotted	

Population:	6,269
Labor Force:	1,873
Unemployment:	42%

Culturally:

The semi-nomadic culture of the Blackfeet was that of the Plains tribes generally. The Sun Dance was important, as were the All Comrades, a series of 12 or more war societies in which membership was based on age. The Blackfeet were famous horsemen, hunters, and warriors who were greatly feared by their enemies.

Government:

The Blackfeet Tribe is organized under the Indian Reorganization Act of 1934, with a constitution and bylaws. The governing body is the popularly elected Blackfeet Tribal Business Council consisting of nine members elected for 2-year terms.

Natural Resources:

Land Management Intensity & Productivity

Management Intensity

Productivity	Intense	Moderate	Low
High	52,000	118,000	92,000
Moderate	40,000	220,000	194,000
Low		115,000	100,000

Agriculture:

985,159	Total Grazing Acres
221,595	Tribally Controlled
720,311	Allotted
112,216	Acres of Timberland Grazed
8,616	Acres of Irrigated Land
1,258	Acres Tribally Used
2,151	Acres Used by non-Indians
246,228	Estimated Ultimate Irrigable Acres

Blackfeet (continued)

Land Use:	689,678	Open Grazing
	200	Leased to non-Indians
	33,628	Commercial Timber Acres
	82,165	Non-commercial Timber Acres
	29,619	Irrigable Farmland
Acres Dry Farm:	115,660	
	236,500	AUMS Authorized
	250,905	AUMS Grazed 1976
Cattle:	43,816	Indian Owned
	40	Non-Indian Owned
Horses:	1,900	All Indian Owned
Sheep & Goats:	4,055	
Timber:	283,617	Community Timber Volume MBM
	33,628	Community Timber Acres
	4,000	MBM Annual Allowable Cut
	2,623	C.Y. 1976 MBM Harvest
	$46,163	C.Y. 1976 Stumpage Harvest Dollars
	40	1976 Thinning Reforestation Acres
Minerals:	$625,447.03	Tribal Royalties on Production
	850,834.13	1976 Total Barrels Produced
	356	Producing Wells
	$124,335.00	Total Oil & Gas Leases (Tribal Acres)
Gasoline:	$ 6,429.94	Tribal Royalties on Production
	809,091.72	1976 Total Tribal Production
Gas:	533,382,635.00	1976 Cubic Feet Tribal Total
	37,973.97	Tribal Royalties on Production
	13	Gas Wells at Present

Oil & gas production from 3 fields. Coal and other metallics mined for local use. High potential of large deposits of titaniferous magnetite and sand and gravel.

Sand & Gravel:	332	Acres Leases
	$9,083.50	1976 Income From Above

Recreation:

There are 11 lakes and ponds covering 3,775 acres. There are historical and archeological areas open

to the public and adequate hiking areas are provided. Winter sports include skiing and snowmobiling and fishing is a year-round activity. Browning, gateway to Glacier National Park, is the principal reservation shopping center. This is also the site of the Museum of the Plains Indians, a nationally known repository of Indian artifacts. North American Indian Days are celebrated annually with dances, ceremonies, and a rodeo. In addition to Glacier Nation Park, reservation recreation areas include Lower St. Mary's Lake, Duck Lake, and other such areas.

Cheyenne River Sioux
Reservation
Sioux Tribe

Wayne L. Ducheneaux
Chairman, Cheyenne River
Sioux Tribal Council
Eagle Butte, South Dakota
(605) 974-2321 57625

Area:	1,419,504	Total	Population:	4,308
	4,554	Government	Labor Force:	1,075
	911,467	Tribal	Unemployment:	27%
	503,483	Allotted		

Culturally:

Plains Indians of a buffalo centered economy who have turned to agriculture. Highly mobile and good horsemen, they speak the Lakota dialect of the Siouan language.

Government:

The tribe is governed by a 15 member council elected for 2-year terms. The chairman, who heads the tribal government, is elected at large for a 4-year term.

Natural Resources:

No response to Data Request from Bureau of Indian Affairs, Aberdeen Office.

Business:

The tribe owns and operates a number of businesses including a supermarket in Eagle Butte, a beef sales pavilion, a beef herd enterprise, a gas station, 2 laundromats, and the local phone company. Half of the tribe's income of $300,000 comes from farming. Twenty-five people work full-time for the tribe.

Minerals:

Lignite, petroleum and sand and gravel production. Major gas field and lignite deposits. Lignite coal is the only mineral resource currently being mined. Oil is known to exist in substantial amounts but is not being exploited.

Cheyenne River Sioux (continued)

Recreation:

The Oake Reservoir, on the eastern border of the reservation, is an excellent hunting, fishing, and watersport area. Also hiking and horseback riding is available. Each summer a rodeo and pow-wow take place in Eagle Butte.

Crow Agency
Crow Tribe

Patrick Standsoverbull
Chairman
Crow Tirbal Council
Crow Agency, Montana
(406) 638-2611 59022

Area:	1,554,253.87	Acres	Population:	4,508
	344,304.69	Tribal	Labor Force:	1,755
	1,209,949.18	Allotted	Unemployment:	56%

Culturally:

The early ancestors of the Crow lived in the eastern forests. They practiced agriculture and acheived a high level of civilization. As they were forced westward into the wilderness, they gradually became more and more dependent upon the hunt. By the time of their settlement in the West, their agricultural pursuits were limited to the planting of corn and squash. Soon after their separation from the main tribe, the Crow abandoned agricultural ways and became a nomadic people. They were always on the move after game and in constant warfare with other tribes of the plains and mountains. This manner of living came to an end in 1878 when reservation life began.

Government:

The Crow Tribe is governed by a general council composed of all male members of the tribe 21 and over, and all female members of the tribe 18 and over. The tribal executive committee consists of 14 members and represents all of the districts on the reservation. Officers selected by council.

Natural Resources:

Land Management Intensity and Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	160,000	91,000	46,142
Moderate	220,000	400,000	351,000
Low	5,000	115,000	178,822

Agriculture:	1,212,911	Total Acres Grazed
	375,000	Tribally Controlled

Crow Tribe (continued)

28,761	Acres of Irrigated Land
16,247	Acres Tribally Used
12,514	Acres Used by Allottees
107,723	Estimated Ultimate Irrigable Acres

Land Use:	231, 198	Open Grazing
	12,596	Allottee Acres
	218,602	Tribally Used
	34,281	Commercial Timber
	73,331	Non-commercial Timber
	200,867	Acres Dry Farm
	42,093	AUMS Authorized
	41,343	AUMS Grazed
Cattle:	6,573	Indian Owned
	1,256	Non-Indian Owned
Sheep & Goats:	1,000	Indian Owned
	1,850	Non-Indian Owned

Business:

The Sun Lodge Motel owned and operated by the Crow Tribe.

Timber:	34,281	Commerical Timber Acres
	73,331	Non-commercial Timber Acres
	107,612	Tribal Use

Minerals:

Coal:	5,215,146	Tons Production during 1975
	$2,387,363.42	Total Income for Year
	75,360.94	Acres Leased
	4	Leases (Tribal)

Major coal deposits on the reservation are estimated to be a minimum of 4 billion tons. Some uranium potential. The coal is found in major deposits including:

Deposit	Million Tons	Sulfur Content	Btu/lb.	Average Thickness
Wolf Mountain	1,922	.40%	9,200	35 feet
Sarpy Creek	1,500	.50%	8,600	20-50
Little Wolf	314	.50%	8,600	24
Jeans Fork	90	.50%	8,600	13

Crow Tribe (continued)

Clay:	$2,696.63	Total Income, 1976
	7,191	C.Y. 1976 Production
	40	Acres Leased
	1	Tribal Leases
Oil:	40,184.00	1976 Barrels Production
	46,645.53	1976 Tribal Royalties on Production

Oil & Gas:

149 Oil and Gas Leases for 169,824 Acres Tribally Leased. There are presently 6 oil wells operating 1976 Royalties from oil = $40,184.00.

Recreation:

There are 682 acres of lakes and ponds. Limited winter sports and picnicking and other spectator sports are available.

Fort Belknap Reservation
Gros Ventre & Assinboine
Tribes

Jack Plumage
Chairman
Fort Belknap Community
Council
Harlem, Montana 59526
(406) 353-2258

Area: 617,488 Acres
528,687 Tribal
88,801 Allotted

Population: 1,629
Labor Force: 371
Unemployment: 18%

Culture:

The Assiniboine speak a Siouan dialect while the Gros Ventre speak a language of the Algonquin family. Despite this basic difference, earliest recorded history indicates that these tribes occupied adjacent hunting grounds and followed a nomadic plains culture centered on the Buffalo. Both tribes also performed the Sun Dance.

Government:

The Fort Belknap Community Council, which is the official governing body for the reservation, is composed of 12 members from four districts. The Gros Ventre and Assiniboine Tribes have equal representation.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	56,975	104,597	10,506
Moderate	7,796	366,091	16,325
Low		52,298	2,900

Agriculture:	56,975	Total Acres Grazed
	394,844	Tribally Controlled
	10,285	Acres Of Irrigated Land
	9,734	Acres Tribally Used
	551	Acres Used By Allottees
	45,111	Estimated Ultimate Irrigable Acres
Land Use:	522,986	Open Grazing

Fort Belknap Reservation (Continued)

Land Use (cont.)	456,883	Tribally Used
	66,103	Used By Non-Indians
	10,506	Commercial Timber
	16,325	Non-Commercial Timber
	50,661	Acres of Dry Farm Land
	89,454	AUMS Authorized
	89,454	AUMS Grazed
Cattle:	14,237	Indian Owned
	671	Non-Indian Owned

Business:

The tribe has a shopping complex which is tribally owned. In addition, there are 14 individually owned businesses on the reservation.

Timber:	9,429	Community Timber Volume MBF
	10,506	Community Timber Acres
	200	MBF Annual Allowable Cut
	18	1976 Cut (MBF)
	0	1976 Reforestration
	15	1976 Thinning
	187	1976 Tribal Revenue From Timber

Minerals:

There are 13 current oil and gas leases.
$10,490.40 Oil 1976 Rental and Bonus Fees.
Known Coal and Oil and Gas Deposits.

Sand and Gravel:	38,287	1976 Production Tonage
	$7,739.22	1976 Tribal Income From Oil Production
	162	Current Acres Leased

Recreation:

Facilities include small game hunting, fishing, hiking, snow mobiling, boating, camping, swimming and horse back-riding.

Fort Berthold Reservation
Mandan, Hidatsa and Arikara Tribes

Mrs. Rose Crow Flies High
Chairman, Fort Berthold
Tribal Business Council
New Town, North Dakota
58748
(701) 627-4816

Area:	980,500 Total Acres	Population:	2,750
	45,044 Tribally Owned	Labor Force:	946
	372,259 Allotted	Unemployment:	40%
	174 Govt. Owned		
	563,023 Non-Indian		

Culture:

Agricultural tribes, greatly reduced in numbers by the small pox epidemic of 1837. Survivors were placed on the Fort Berthold Reservation established by executive order in 1871. The remains of their semisubterranean homes are of great interest today.

Governments:

The Three Affiliated Tribes are a Federal corporation under the Indian Reorganization Act of 1934. Charter was ratified in 1937 and amended in 1961. A business council of 10 members serve for 2 year terms.

Natural Resources: UNKNOWN

Agriculture: ALL UNKNOWN

Business:

Annual tribal income is $83,000 30% of which comes from grazing permits. There are several tribal associations and cooperatives on the reservation. Also, the Three Tribes Stoneware, and Four Bears Lodge are working enterprises on the reservation.

Timber: UNKNOWN

Minerals:

Oil deposits are currently being exploited. Clay and lignite exist in large quantities on the reservation, but are not currently being exploited. There are potential clay, leonardite and salt/potash deposits, also.

Fort Berthold Reservation (Continued)

Recreation:

The tribe opened its tourism complex in June 1972 at the Four Bears Park. The lodge there offers sportsmen and travelers a unique experience. Services include a marina with rental and launch facilities, a 24-unit trailer park, a public laundromat, a service station, picnic and camp areas, a museum and a nearby golf course.

Fort Peck Reservation
Assiniboine & Sioux Tribes

Norman Hollow
Chairman
Fort Peck Tribal Executive Board
Popular, Montana 59255
(406) 768-3759

Area:	953,182	Total Acres	Population:	4,715
	380,881	Tribal	Labor Force:	2,066
	563,568	Allotted	Unemployment:	47%
	8,733	Idle		

Culture:

Nomadic-hunters of the past, now agriculturally oriented. Live in distinct tribal groups and maintain many of their customs and traditions.

Government:

Governed by 15-man council, 3 officers elected at large and 12 men from geographic districts. Each serves a 2 year term. They operate under a constitution and bylaws revised in 1960.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	230,120	449,300	16,150
Moderate	9,810	191,400	8,150
Low	4,850	19,420	18,873

Agriculture:	649,850	Total Acres Grazed
	432,454	Tribally Controlled
	12,000	Acres of Timberland Grazed
	7,034	Acres of Irrigated Land
	4,053	Acres Tribally Used
	2,782	Acres Used by Allottees
	17,175	Estimated Ultimate Irrigable Acres
Land Use:	649,850	Open Grazing
	214,637	Tribally Ued
	428,019	Used By Allottees
	7,194	Idle

Fort Peck Reservation (Continued)

Land Use (cont.)

2,700	Commercial Timber
9,300	Non-Commercial Timber
7,034	Acres Dry Farm Land
149,926	AUMS Authorized
127,948	AUMS Grazed

Cattle:	7,106	Indian Owned
	11,791	Non-Indian Owned
Horses:	25	Indian Owned
	27	Non-Indian Owned
Sheep & Goats:	300	Indian Owned
	0	Non-Indian Owned

Business:

There are 6 individually owned enterprises on the reservation.

Timber:	7,300	Community Timber Volume MBF
	2,700	Community Timber Acres
	200	MBF Annual Allowable Cut
Minerals:	18,932.30	Acres Currently Leased (Oil & Gas)
	90	Present Leases (Oil & Gas)
	4	Present Permits (Oil & Gas)

Known large deposits of Lignite (Approx. .5 billion tons.) Oil and gas has been produced since 1969.

Oil:	104,790.00	Royalties on Production (Tribal)
	136,025.80	1976 Barrel Production
	4	Present Producing Wells
	18,932	Total Tribal Acres Leased for Gas & Oil Production.
Gas:	362,81	Tribal Royalties on Production
	31,441,250	Cubic feet of gas produced in 1976.
Sand & Gravel:	52,181.52	C.Y. 1976 Production
	$6,602.68	1976 Total Tribal Income
	1,003	Acres Leased

Fort Peck Reservation (Continued)

Borrow Dirt:	15,000	C.Y. 1976 Production
	$1,200.00	1976 Total Income
	160	Acres Leased

Recreation:

Recreation facilities include golfing, fishing, hunting and spectator sports events. There are also some camping, and picnic facilites available. Snow mobiling is allowed during the season. Hunting of small and large game is widespread. Indian dances and other special events are held during the summer.

Hopi Reservation
Hopi Tribe

Abbott Sekaquaptewa, Chairman
Hopi Tribal Council
P.O. Box 123
Oraibi, Arizona 86039
(602) 734-3457

Area: 2,472,254 Total
ALL Tribal

Population: 6,865
Labor Force: 2,008
Unemployment: 51%

Culturally:

Hunters, fishers. A Uto-Aztecan language speaking tribe. The old towns are constructed in typical adobe architecture. Property inheirtance and residence are matriarchal. Very prideful nation; patient, industrious, peaceful people. Complex religion, kachina and gods play important part in dances. Hopi produce excellent silver-work, carved kachina dolls, silveroverlay, polychrome pottery, baskets and other art forms.

Government:

Council formed in 1951. Constitution in July 1935. Independently formed village, each having an elected governor, or herditary chief.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High		14,344	67,900
Moderate		160,291	
Low		120,000	

Agriculture:

603,287 Total Acres Grazed
ALL Tribally Controlled
86 Estimated Ultimate Irrigable Acres.

Land Use:

603,287 Open Grazing
ALL Tribally Used
27,753 Non-Commercial Timber
6,269 Acres Dry Farm Land

Hopi Reservation (Continued

Timber: None

Agriculture Land Use:

Use	Acres	Value
Cultivated Row Crops	4,700	$32,900
Garden Crops	589	$4,783

Minerals:

Rich coal deposit on Black Mesa (reservation) area. Coal, Oil leases $3,000,000 annually for 19 acres. Coal lease $400,000 annually. Uranium not developed. 1 Sand & Gravel lease covers 11 acres, 3 additonal sand & gravel leases cover 27 acres.

Business:

Economy of tribe is extremely limited. Some Hopi own and operate small businesses. Jobs are scarce on reservation. The tribe has an industrial park near Winslow, Arizona. A garmet factory is located there and employs many Hopi women. 62 businesses (Indian-owned) and many non-Indian owned businesses.

Recreation:

33 unit motel, restaurant, camping facilities.

Jemez Pueblo
Tano-Jemez Tribe

Rosendo Gachupin,
Governor
P.O. Box 78
Jemez Pueblo, N.M. 87022
(505) 834-7340

Area:		
88,866.93	Total Acres	
6.71	Government	
88,860.22	Tribal	
-0-	Allotted	

Population:	1,448
Labor Force:	360
Unemployment:	39%

Culturally:

Strongly communal and religious and they still hold closely their traditional customs and ceremonies. Spanish influence in conversion to Christianity was too forceful and led to the conflicts between the tribe and the spanish.

Government:

Originally controlled by the Caciques and a War Chief; with the advent of the Spanish the government changed and the control of strictly civil affairs was put in the hands of a governor, 2 lieutenant governors, and a council of 12. At Jemez the Council members are all former governors of the pueblo.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	863		1,395
Moderate			60,185
Low		25.459	965

Agriculture:		
25,450	Total Acres Grazed	
25,459	Tribally Controlled	
60,185	Acres of Timberland Grazed	
1,828	Acres of Irrigated Land	
868	Acres Tribally Used	
965	Idle	

Land Use:	
25,459	Open Grazing
25,459	Tribally Used

Jemez Pueblo (Continued)

Land Use: (cont.) 13,385 Commercial Timber
47,982 Non-Commercial Timber

Agriculture Land Use (Irrigated Lands):

Use	INDIAN Acres	Value
Cultivated Row Crops	423	$49,745
Small Grains	68	$9,792
Forage, Hay & Tame Pasture	219	$30,600
Garden Crops	102	$59,420

Business:

Local business establishments are limited to 3 small grocery type business all owned by individual tribal members. A major shopping center is approximately 45 miles away from Albuquerque. There is a small manufacturing plant on the reservation.

Timber:

61,367	Community Timber Volume (MBM)
13,385	Community Timber Acres
799	Allowable Annual Cut
1,598	C.Y. 1974 Harvest (MBM)

Minerals:

Deposits of Sand, Gravel, and Clay. Jemez is known to have large uranium deposits and a high possibility of coal deposits. Geothermal reserves are extensive.

Recreation:

The tribal buildings are still used for traditional activities. An annual fiesta and other dances are held regularly and are open to tourists.

Jicarilla Reservation
Jicarilla Apache Tribe

Leonard Atole, President
Jicarilla Apache Tribe
Dulce, New Mexico 87528
(505) 759-3242

Area: 742,315
742,315 Tribal

Population: 1928
Labor Force: 820
Unemployment: 46%

Culturally:

Nomadic raiders who were closely related to the Navajo. Living in easily transported wickiups.

Government:

Governed by a President, Vice-President, and 8 Council Members serving 4-year terms. The Constitution has provisions for Federal relationships, territorial boundaries, tribal memberships, elected tribal government, civil rights, the powers of the tribal council, an executive department, and law and order.

Natural Resources:

Land Management Intensitv & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	179,000		
Moderate		401,034	
Low			87,105

Agriculture:	260,618	Total Acres Grazed
	253,218	Tribally Controlled
	355,330	Acres of Timberland Grazed
Land Use:	682,604	Open Grazing
	136,954	Commercial Timber
	218,376	Non-Commercial Timber
	1,090	Acres Dry Farm Land
	50,101	Wildlands
	75,176	Non-Agricultural
Cattle:	4,130	Indian Owned
	442	Horses (Indian Owned)
	6,142	Sheep & Goats (Indian Owned)

Range is overstocked; no non-Indian range use.

Jicarilla Reservation (Continued)

Timber:

317,587	Community Timber Volume MBF
136,954	Community Timber Acres
5,000	MBF Annual Allowable Cut
1,190	1974 Cut

Skyline Lumber Co. is located on the reservation.

Business:

20 to 30 percent of the tribal income is derived from tribal businesses. Fifty people are employed in tribal activities. The tribe owns and operates Jicarilla Apache Tribal Industries for which a plant is being constructed, a leather craft shop, cattle sales barn, a liquor store, and a tourism enterprise, which includes a store and campgrounds. Tribal members own a laundromat and garage.

Minerals:

The tribal income, which averages $800,000 annually, is largely derived from oil & gas leases. Minerals existing on the reservation include natural gas, oil, and timber. Coal deposits, although sizeable, are not being mined. There are 269 oil & gas leases. 584,243 acres leased involving a 1974 lease income of over $2,000,000. 1-seven acre mineral lease. One of the larger oil producing acres; oil is main revenue.

Recreation:

Much of the reservation and the adjoining Carson National Forest have been preserved in its natural beauty. Having an abundunt supply of game, this is one of the best hunting areas in the state. Mule deer are especially abundunt. There are 3 annual deer hunts, a 3-day Little Beaver Roundup, celebration in Mid-July, a 3-day tribal feast at Stone Lake in September, and an annual rodeo. Numerous fishing and camping facilities are available for campers.

Laguna Pueblo
Keresan Tribe

Roland Johnson
Governo
Laguna Pueblo
P.O. Box 194
Laguna, New Mexico 87026
(505) 243-3716

Area:	454,453.78	Total	Population:	2,464
	412,211.50	Tribal	Labor Force:	970
	41,225.55	Allotted	Unemployment:	35%

Culturally:

Having a strong tribal bonds, they are also close friends of other pueblos. Native language and religion are still vital and customs and ceremonies of the past are still used today.

Government:

The council derives its legal authority from the amended constitution effective in 1950. Adopted pursuant to the provisions of the act of June 18, 1934, and approved by the Secretary of the Interior, the constitution provides for a 21 member council, made up of 12 elected village representatives and nine staff officers, elected at large. Three of the members of the Council, the governor, the treasurer and the secretary serve full-time.

Natural Resources:

Land Management Intensity & Productivity

Productivity	Intense	Moderate	Low
High	191	-	8,391
Moderate	-	-	181,431
Low	-	225,784	-

Agriculture:	223,901	Total Acres Grazed
	222,384	Tribally Controlled
	1,690	Acres of Irrigated Land
	191	Acres Tribally Used
	1,499	Acres Idle
	5,000	Estimated Ultimate Irrigable Acres
Land Use:	223,901	Open Grazing
	222,384	Tribally Used

Laguna Pueblo (Continued)

Land Use: (cont.)

1,517	Used by Non-Indians
1,307	Commercial Timber
182,698	Non-Commercial Timber

Agriculture Land Use:

Use	INDIAN Acres	Value
Cultivated Raw Crops	46	$4,637
Forage	37	$6,600
Garden Crops	100	$45,940

Timber:

186,188	Timber Acres
182,689	Non-Commercial Timber Acres
1,307	Commercial Timber Acres
1,990	MBF Comm. Timber Inventory
77	MBF Allowable Annual Cut
762	MBF 1974 Cut

Minerals:

The tribal income averages $2,000,000 yearly and is almost totally from uranium resources. Deposits of uranium, clay, and sand & gravel on the reservation are currently being utilized. Marble is also present in large quantities but is not being quarried. 6 mineral leases on 14,298 acres. One of the largest uranium operations in the world is located here. Two other deposits are currently being developed.

Business:

There are approximately 15 individually owned Indian enterprises at Laguna Pueblo. The Santa Fe Railroad operates a section on tribal land and also employs Indians. Tribal business and recreation fees contribute to tribal income. The tribe employs 12 persons full-time.

Recreation:

In keeping with tradition, Laguna Pueblo holds an annual fiesta. A more recent additon to tribal activities is the baseball tournament.

Navajo Reservation
Navajo Tribe

Peter MacDonald
Chairman
Navajo Tribal Council
P.O. Box 709
Window Rock, Arizona 86515
(602) 871-4595

Area:	14,225,711	Total Acres	Population:	131,379
	13,191,410	Tribal	Labor Force:	43,059
	710,209	Allotted	Unemployment:	43%

Culture:

An aggressive and powerful tribe they raised horses and sheep and learned of agricultural talents from the Spaniards. The family unit is an important part of the Navajo social organization. It is a co-operative unit of responsible leadership bound together by ties of marriage and close relationship. Women hold an important position in the tribe. Religion is still the core of Navajo culture. Navajo's are widely known for their silverwork and rug weaving. The tribe's energy, industry and stamina are central to the progress of the Navajo people.

Government:

The Navajo tribe is governed by a council consisting of 74 members representing the 96 chapters which make up the reservation. Representation is also included from the Alamo, Canoncito, and Ramah Reservations in New Mexico, as well as the Eastern Administrative area. All programs and projects processed through the advisory committee before submission to the council. The popularly elected tribal chairman is administrative head of the tribe.

Tribal Economy:

Tribal income aggrevates approximately $16 million annually and is derived principally from oil, gas, and minerals, forestry, commercial and industrial enterprises and investments.

Natural Resources:

Land Management Intensity and Productivity

Management Intensity

Navajo Tribe (Continued)

Productivity	Intense	Moderate	Low
High	25,644	31,330	367,493
Moderate	109,320	564,363	2,196,980
Low		181,953	8,838,111

Agriculture:	13,433,147	Total Acres Grazed
	13,433,147	Tribally Controlled
	2,949,548	Acres of Timberland Grazed
	4,085	Acres of Irrigated Land
	1,616	Acres Tribally Used
	2,469	Idle
	38,666	Estimated Ultimate Irrigable Acres*
Land Use:	9,325,391	Open Grazing
	ALL	Tribally Used
	439,402	Commercial Timber
	3,049,327	Non-Commercial Timber
	14,451	Acres Dry Farm Land
	1,587,763	AUMS Authorized
	2,441,202	AUMS Grazed
Cattle:	47,524	Indian Owned
Horses:	28,899	Indian Owned
Sheep & Goats:	510,301	Indian Owned

Business:

There are a number of Indian and Non-Indian owned businesses in the reservation area. The tribe itself owns, Wometco, Coca Cola Company, a Circle K store, the Balck Oil Company, a Kentucky Fried Chicken Outlet and one other enterprise.

Timber:	1,619,570	Commercial Timber Volume MBF
	410,000	Commercial Timber Acres
	44,600	MBF Annual Allowable Cut
	$2,275,880	1976 Cut Revenues
	2	1976 Reforestation
	1,429	1976 Thinning

The tribes operates a large saw-mill and processing enterprise.

Navajo Reservation (Continued)

Minerals: See Navajo Section of Report.

*The BIA lists 38,872 acres and The Navajo Irrigation Project covers more than 110,000 acres.

Northern Cheyenne Reservation
Northern Cheyenne Tribe

Allen Rowland
Chairman
President, Northern Cheyenne Tribal Council
Lame Deer, Montana 59043
(406) 477-6240

Area: 434,419
434,654 Tribal
3,765 Allotted

Population: 3,065
Labor Force: 1,272
Unemployment: 37%

Culturally:

The Cheyenne, speak an Algonquian language, migrated from the Minnesota area where their culture has been forest oriented and agricultural. Buffalo hunting turned to growing food crops. Life was nomadic based upon the horse and the buffalo. Strong religious traditions.

Government:

The tribe is governed by a 10-member council headed by a president who is elected at large. Both members and president serve terms of 4 years, the members being elected on a staggered basis.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	1,350	3,000	94,250
Moderate	11,000	61,000	78,000
Low	2,000	91,000	88,213

Agriculture:

235,441	Total Acres Grazed
234,761	Tribally Controlled
161,560	Acres of Timberland Grazed
4,800	Estimated Ultimate Irrigable Acres

Land Use:

235,441	Open Grazing
234,761	Tribally Used
680	Used by Non-Indians
137,221	Commercial Timber
24,339	Non-Commercial Timber
32,000	Acres Dry Farm Land

Northern Cheyenne Tribe (Continued)

Timber:	330,315	Community Timber Volume MBF
	110,337	Community Timber Acres
	5,500	MBF Annual Allowable Cut
	305	1976 Cut
	1,091	1976 Thinning
	$9,351	1976 Tribal Revenue From Timber
Minerals:		
Oil & Gas:	19	Present Leases
	12,136	Total Acres Leased
Oil:	$35,231.88	1976 Income From Oil
Coal:	6	Current Leases
	$111,279.60	1975 Income From Coal
	11	Current Permits
	277,773	Present Total Acres Leased
Gravel:	21,516	C.Y. 1975 Production
	550	Acres Leased

Known Coal Reserves of 3.5 million tons, found in several deposits include:

Deposit	Million Tons	Sulfer Content	Btu/lb.	Thickness of bd.
Cheyenne Meadows	1,200	.40%	8,400	50
Greenlease	454	.71%	8,422	17
Sweeney	326	.11%	8,175	17
Colstrip	1,500	.12%	8,836	24

Some Uranium Potential.

Recreation:

Snow Mobiling, Fishing, Camping and spectator sports are included.

Osage Tribe
Osage Agency

Sylvester Tinker
Principal Chief
Osage Tribal Council
P.O. Box 2
Pawhuska, Oklahoma 74056
(918) 287-2481

Area:	205,331		Population:	3,510
	675	Tribal	Labor Force:	1,080
	204,656	Allotted	Unemployment:	28%

Culturally:

Osage culture, language and customs are being revived by the tribe. Originally an Ohio River Tribe of fishers and hunters, their main income now is from agriculture.

Government:

The tribe is governed by the Osage Tribal Council consisting of 10 members.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	8,848	42,233	-0-
Moderate	10,970	56,162	5,560
Low	-0-	8,553	64,139

Agriculture:

995	Estimated Ultimate Irrigatable Acres
182,057	Acres of Grazing Land
127,885	Leased to Non-Indians
180,234	Acres Grazed
-	Cattle
-	Horses
-	Sheep & Goats
-	AUMS Authorized
-	AUMS Grazed
8,619	Acres Dry Farm
500	Acres Idle
-	Acres Irrigated
-	Tribally Used
-	Used By Allottee
95	Acres Idle
900	Undeveloped

Osage Tribe (Continued)

Business:

There is one Indian-owned custom slaughterhouse and one recreational facility located on Osage land.

Timber:

Community Timber Volume (MBM)
Community Timber Acres
Allowable Annual Cut
C.Y. 1976 Harvest (MBM)
1976 Thinning
1976 Reforestation

Minerals:

Oil & Gas:	
4,307	Total Leases
1,141,114	Total Acres Leased
$21,607,505.69	Royalties on Prod. of Oil
$1,075,574.61	Royalties on Prod. of Gas
13,155,169	Prod. Barrels of Oil
4,182,809,000	Prod. C.U. of Gas

Recreation:

There are 205 acres of Osage land set aside for recreational use.

Rocky Boy's Reservation
Chippewa-Cree Tribe

John Windy Boy, Chairman
Chippewa-Cree Business Comm.
Rocky Boy Route
Box Elder, Montana 59521

Area:			Population:	1,675
107,613			Labor Force:	709
98,979	Tribal		Unemployment:	59%
882	Allotted			
882	Idle			

Culturally:

A band of Chippewa from Minnesota moved into northern Montana and nearby Canada in the latter part of the 19th century. During the same period, Cree, led by Chief Little Bear, were in the same area. Having no land base, both bands squatted on the fringes of Montana cities and reservations. They were officially but unsuccessfully deported to Canada in 1896 through actions of Congress. In 1916, through the efforts of Chiefs Rocky Boy and Little Bear and prominent citizens, the reservation was established on part of the Fort Assiniboine Military Reserve by executive order. The Chippewa and Cree lived in small bands on both sides of what is now the Canadian border from the Great Lakes as far west as Northern Montana and Saskatchewan, with the Cree generally living further north. These groups spoke languages of the Algonquian family. The Chippewa Band which settled at Rocky Boy's originated in Minnesota though it had adopted a Plains rather than Woodland culture in most respects.

Governments:

Organized under the Indian Reorganization Act of June 1934, the Rocky Boy's adopted a constitution in 1935 and ratified their charter in 1939. The governing body is the nine-member business committee elected by popular vote from the five districts.

Natural Resources:

Land Management Intentsity & Productivity

Management Intensity

Productivity	Intense	Moderate	Low
High	7,127	11,771	5,334
Moderate		80,872	882
Low			

Rocky Boy Reservation (Continued)

Agriculture:	97,977	Total Acres Grazed
	73,279	Tribally Controlled
	17,105	Acres of Timberland Grazed
	8,000	Estimated Ultimate Irrigable Acres
Land Use:	80,872	Open Grazing
	73,279	Tribally Used
	7,593	Used by Non-Indian
	11,771	Commercial Timber
	5,334	Non-Commercial Timber
	7,411	Acres Dry Farm Land
	26,127	AUMS Authorized
	25,462	AUMS Grazed
Cattle:	2,902	Indian Owned
	594	Non-Indian Owned
Horses:	140	Indian Owned
Timber:	53,573	Community Timber Volume MBF
	11,771	Community Timber Acres
	1,500	MBF Annual Allowable Cut
	7	1976 Cut
	31	1976 Reforestation
	51	1976 Thinning
	$206.00	1976 Tribal Revenue From Timber
Minerals:	124	Present Leases (Oil and Gas)
	1	Present Permit (Oil and Gas)
	172,507	Acres Leased
Oil:	896,435	1975 Income From Oil
	$172,507	1975 Total Acres Leased For Oil and Gas Prod.
Gas:	12	Gas Producing Wells
	$4,806,137.50	(MCF) 1975 Total Production
	6,799.08	1975 Royalties on Production
Sand & Gravel:	$1,053.00	1975 Total Income
	195,316.91	1975 Acres Leased

Leases Other Than Oil & Gas:

87,749.81 Total Acres Leased

Known Coal Deposits, some Uranium potential.

Rocky Boy Reservation (Continued)

Business:

There are 8 enterprised (individually-owned) located on the reservation.

Recreation:

Baldy Butte Inn and Recreation Area are located on these lands; the capacity is 75 rooms. Other facilities include: Hiking, skiing, snow mobiling, fishing, rodeos, camping, picnicking, and horse back riding.

Santa Ana Pueblo
Keresan Tribe

Clyde Leon, Governor
Santa Ana Pueblo
P.O. Box 37
Bernalillo, New Mexico 87004
(505) 867-2406

Area: 42,527.50 Total
42,527.50 Tribal

Population: 376
Labor Force: 125
Unemployment: 8%

Culturally:

Native language, religion, traditionally strong communal lands are vitally important at this pueblo. Through increased exposure to the white man's ways, profound changes are occurring; however, traditional activities still occur in their everyday life at the pueblo. They are now agriculturally oriented.

Government:

The rights and powers of the tribal council are based primarily on their original status of sovereignty; recognized by the governments of Spain, Mexico and the United States.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	370	-	907
Moderate	-	-	1,562
Low	-	40,970	780

Agriculture:	40,970	Total Acres Grazed
	40,970	Tribally Controlled
	1,150	Acres of Irrigated Land
	370	Acres Tribally Used
	780	Idle
	1,150	Estimated Ultimate Irrigable Acres
Land Use:	40,970	Open Grazing
	ALL	Tribally Used
	2,226	Non-Commercial Timber

Santa Ana Pueblo (Continued)

Timber: 2,226 Non-Community Timber Acres
742 MBF Standing Inventory
64 1974 Cut

Agriculture Land Use:

Indian Use	Acres	Value
Cultivated Raw Crops	46	$4,637
Forage	37	$6,600
Garden Crops	100	$45,940

Minerals:

The tribe has leased some of its land to Shell Oil Company, but no exploration has been done; roofing sand, sand and gravel, 20 oil and gas leases on 38,629 acres, one mineral lease on 25 acres.

Recreation:

The annual fiesta is a gala time for pueblos, friends and relatives to enjoy traditional music and dance. In addition, there are numerous tribal events which serve to maintain the community ties and tribal traditions.

Southern Ute Reservation
Mouache and Copote Ute Tribes

Leonard C. Bush, Chairman
Southern Ute Tribal Council
Ignacio, Colorado

Area:	307,110	Total	Population:	770
	301,867	Tribal	Labor Force:	242
	4,966	Allotted	Unemployment:	36%
	277	Government		

Culturally:

Plains Indians who followed the buffalo. Traveling by foot, leadership was informal; adapted to horses in 1740. Present reservation has a tricultural base from the Spanish-Americans and Anglos living there.

Government:

Tribal council of 6 members and has vast powers over tribal activities. The tribe is organized as a Federal corporation for business purposes.

Natural Resources

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	29,320	21,484	17,204
Moderate	7,287	72,101	5,132
Low	587	114,901	33,524

Agriculture:	142,744	Total Acres Grazed
	33,630	Tribally Controlled
	12,245	Acres of Irrigated Land
	4,390	Acres Tribally Used
	4,108	Used by Non-Indians
	21,231	Estimated Ultimate Irrigable Acres
Land Use:	142,744	Open Grazing
	33,630	Tribally Used
	30,178	Commercial Timber
	122,350	Non-Commercial Timber
	190	Acres Dry Farm Land
Timber:	30,178	Community Timber Acres
	254	1974 Cut MBF

Southern Ute Reservation (Continued)

Timber: (Cont.)

$750.00 1976 Tribal Revenue From Timber

Agriculture Land Use:

Use	Indian Acres	Indian Value	Non-Indian Acres	Non-Indian Value
Cultivated Row Crops			50	$17,100
Small Grains (Close Drilled)	150	?	140	$21,050
Forage, Hay Tame Pasture	5,515	$312,409	4,822	$278,804
Garden Crops	2	$800		

Minerals:

Production of resources on the reservation include oil & gas, coal & sand and gravel. Uranium currently exploited; two major oil fields; Durango coal field under the reservation; large salt deposits: stone H-L, rare earths, H-I, barite H-S, clays M-?, copper, gold and silver M-S. The BIA is currently doing a mineral inventory of the reservation. 138 oil and gas leases on 163,412 acres; 3 mineral leases on 20,000 acres; $600,000 income from minerals, oil and gas leases.

Business:

Currently exploited mineral deposits provide tribal income of $448,800 and employs 22 persons. There are many commercial establishments but most are owned by non-Indians. The tribe owns and operates Southern Ute Motel-Pino Nuche Purasa. It opened January 1972 and employs 40 to 44 tribal members.

Recreation:

Theatres are located in Durango. The annual Southern Ute Bear Dance and Sun Dance draw many visitors. There is also an annual tribal fair. There is a community swimming pool and recreational gymnasium-type room. The tribe owns a motel, restaurant, lounge, museum and

Southern Ute Tribe (Continued)

Recreation: (cont.)

crafts center, fishing and waterskiing on two lakes; good hunting.

Spokane Reservation
Spokane Tribe

Alfred McGoy, Chairman
Spokane Business Council
Wellpinit, Washington 99048
(509) 258-4232

Area:			Population:	
	137,002	Total		
	102,441	Tribal	Labor Force:	171
	34,522	Allotted	Unemployment:	69%
	38	Government		

Culturally:

Seminomadic Plateau Indian Culture; fishing and hunting. Main economic sources: basketry skills, skilled horsemen. Little formal organization.

Government:

Constitution of 1972 calls for a business council composed of 5 elected tribal councilmen.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	1,395		
Moderate		50,805	13,000
Low		57,555	14,217

Agriculture:	121,177	Total Acres Grazed
	ALL	Tribally Controlled
	93,832	Acres of Timberland Grazed
	2,000	Estimated Ultimate Irrigable Acres
Land Use:	27,945	Open Grazing
	25,705	Tribally Used
	2,240	Used by Non-Indians
	94,187	Commercial Timber
	5,894	Non-Commercial Timber
Timber:	102,848	Total Forest Acres
	484	Comm. Timber Volume (MBM)
	96,954	Community Timber Acres
	18,000	Allowable Annual Cut
	18,122	C.Y. 1976 Harvest (MBM)

Spokane Reservation (Continued)

Timber (cont.)

400 1976 Thinning
$1,627,670 1976 Tribal Revenue

Minerals:

Germania - tungsten & uranium deposits known. There are two uranium developments on the Spokane Reservation. In operation is a mine mill complex owned by Newmont Mining's subsidiary, Dawn Mining. Phelps Dodge's subsidiary Western Nuclear is now constructing a large mine mill complex near Wellpinit on the Spokane Reservation. The mine is expected to produce 8 million pounds of uranium over a 10.6 year period. This will equal 3% of U.S. production for each year it is in operation. The mine will be low cost since the ore is a very high grade, .88% (about 5 times the average.)

Business:

The tribe earns an income of about $15,000 each year from its businesses. These include salmon fish traps, an oyster enterprise and a marina.

Recreation:

There is a marine which attracts many visitors. Also, there are camping facilities and annual dance ceremonies.

Uintah & Ouray Ute Tribe

Lester M. Chapoose, Chairman
Uintah & Ouray Tribal
Business Council
Fort Duchesne, Utah 84026
(801) 722-2263

Area:	1,008,152	Total	Population:	1,292
	970,272	Tribal	Labor Force:	456
	37,855	Allotted	Unemployment:	35%
	24	Government		

Culture:

Ancestors inhabited forested mountain slopes of game and productive streams. Each band member was an active contributor to the common welfare. Cooperative sharing was the essence of survival. Arrow and spearhead makers were honored individuals. The annual game drives in the fall were communal in nature. The Ute became experienced horsemen after horses were introduced by the Spaniards.

Government:

The Uintah and Ouray Tribal Business Committee is the popularly elected governing body of the tribe. It is composed of six members who are elected for terms of 4 years. The tribal constitution and bylaws empower the business committee to act on such matters as negotiations for loans in the name of the tribe, formation of enterprises, contractual agreements with other agencies, and other responsibilities.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	2,000	120,252	58,000
Moderate	69,188	431,064	65,970
Low	-	202,202	53,000

Agriculture:	409,274	Total Acres Grazed
	ALL	Tribally Controlled
	462,744	Acres of Timberland Grazed
	59,681	Acres of Irrigated Land
	10,060	Acres Tribally Used

Uintah & Ouray Ute Tribe (Continued)

Agriculture: (cont.)	1,391	Acres Used by Non-Indian
	148,150	Estimated Ultimate Irrigable Acres
Land Use:	409,272	Open Grazing
	265,798	Tribally Used
	70,386	Used by Non-Indian
	29,776	Commercial Timber
	432,968	Non-Commercial Timber
Timber:	432,968	Non-Commercial Timber Acres
	29,776	Commercial Timber Acres
		NO OTHER DATA AVAILABLE

Minerals:

Potential clay, barite, coal, stone, phosphate, gelsonite, gypsum, iron, gold, limestone, manganese, molybdenum, oil shale, petroleum gas, potash, salt, sand & gravel, silver, sodium carbonate, uranium/ uendium.

Business:

The tribe's annual income of $950,000 is primarily revenue from mineral leases and forestry. The tribe also operates a cattle enterprise and recently established a furniture manufacturing company.

Recreation:

The annual Bear Dance of the Ute Tribe is held in April or May, and the Sun Dance takes place in July. Fort Duchesne, an old Army post, has interest for many tourists. Big game hunting and fishing are good in the area. The Flaming Gorge on the Green River, a national tourist attraction, is located near the reservation. The Bottle Hollow Resort and Motel, owned and operated by the tribe, provides luxury accommodations for people visiting the area.

Ute Mountain Reservation
Wiminuche Ute Tribe

Scott Jackson, Chairman
Ute Mountain Tribal Council
Towaco, Colorado 81334

Area:			Population:	
	595,787	Total		1,374
	557,878	Tribally Owned	Labor Force:	438
	9,459	Allotted	Unemployment:	38%
	28,410	Tribal Fee Patent		
	40	Government		

Culturally:

Buffalo hunters of the plains, foot travelers of loose bands. Highly mobile and efficient food-gathers. Skilled horsemen. Now engage in agricultural ventures.

Government:

Operates under a constitution which provides for a council of 7 members with three major officers.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	26,704	5,945	2,967
Moderate		55,310	45,529
Low			451,223

Agriculture:	392,953	Total Acres Grazed, all tribally controlled.
	137,169	Acres of Timberland Grazed
	240	Acres of Irrigated Land, all tribal.
Land Use:	392,953	Open Grazing
	160,604	Non-Commercial Timber
Cattle:	4,509	Indian Owned
Horses:	240	Indian Owned
Sheep & Goats:	982	Indian Owned

Ute Mountain Reservation (Continued)

Agriculture Land Use:

Use	All Indian Use Acres	Value
Forage, Hay Tame Pasture	240	$10,800

Timber:

35,900	Non-Commercial Timber Volume MBF
163,044	Non-Commercial Timber Acres
220	1974 Cut

All Timber is Non-Commercial.

Minerals and Tribal Economy:

There are 92 oil and gas leases on 105,888 acres; annual lease income, $650,000. The BIA is doing a resource inventory presently. Reservation lies in the S.W. corner of Colorado bordering on the Navajo Reservation. Gas, Oil, Sand and Gravel deposits exist in great quantities and are being exploited. Also, deposits of coal, titanium, selenium, uranium and bentonite are available on the reservation. The annual tribal income is over $1 million, comes largely from gas & oil leases. Tribe employs approximately 50 people full-time.

Recreation:

A Bear Dance is held each June. The Tribal Center in Towac has meeting and recreational facilities. There are 5 acres of ponds and 60 miles of streams.

Wind River Agency
Shoshone and Arapaho Tribes

Robert Harris, Sr.
Chairman
Shoshone Business Council
Fort Washaki, Wyoming
82514
(302) 332-4882

Area:	1,886,568	Total Acres	Population:	6,742
	1,787,382	Tribal	Labor Force:	1,688
	97,890	Allotted	Unemployment:	50%

Culturally:

Seminomadic buffalo hunters. Fierce in battle the Shoshone and Arapaho have now taken to farming and livestock for economic support.

Government:

Maintain seperate business council for each tribe, each having 6 members. Reservation business is conducted jointly by both councils.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	3,334	215,600	240,000
Moderate	930	867,782	77,250
Low	120	3,397	478,155

Agriculture:	1,636,883	Total Acres Grazed
	1,631,615	Tribally Controlled
	207,032	Timberland Grazed
	27,556	Acres of Irrigated Land
	9,984	Acres Tribally Used
	11,426	Acres Used By Allottees
	262,500	Estimated Ultimate Irrigable Acres
Land Use:	1,636,883	Open Grazing
	1,545,549	Tribally Used
	5,268	Used By Non-Indians
	37,901	Commercial Timber
	169,132	Non-Commercial Timber
	199,812	AUMS Authorized
	237,371	AUMS Grazed

Shoshone and Arapaho Tribes (Continued)

Cattle:	24,066	Indian Owned
	64	Non-Indian Owned
Horses:	3,186	Indian Owned
Timber:	2,216,224	Community Timber Volume MBF
	37,900	Community Timber Acres
	5,000	MBF Annual Allowable Cut
	9	1976 Cut
	40	1976 Thinning
	$276.	Tribal Revenue From Timber
Minerals:	687	Current Number of Leases (Oil and Gas)
	20	Current Number of Permits (Oil and Gas)
Oil:	7,773,888,02	Income From Oil (Tribal)
	5,837,615,10	1976 Oil Production (Barrels)
	419	1976 Wells
	687	Current Oil & Gas Leases
Gas:	704,388.64	1976 Royalties on Production (Tribal)
	16,287,053,962	1976 Total Cubic Feet Pro.
	52	Gas Producing Wells at Present.
Gasoline:	1,014,649.09	Tribal 1976 Royalties
	86,512	1976 Tons Produced
	19,472.66	Total Income 1976
	346	1976 Acres Leased
Uranium:	31,174.93	Total 1976 Income
	55,172.47	1976 Acres Leased

Business:

There are 3 privately owned enterprises on reservation property.

Recreation:

There are 123 natural lakes and ponds covering 7,827 acres of land. There is a motel/resort area open to the public and there are several scenic and historical sites to see as well as public swimming available.

Yakima Reservation
Yakima Tribe

Watson Totus, Chairman
Yakima Tribal Council
Box 367
Toppenish, Washington 98948

Area:	1,367,405	Total	Population:	7,480
	842,978	Tribal	Labor Force:	2,320
	274,988	Allotted	Unemployment:	32%
	23	Government		
	249,416	Non-Indian		

Culturally:

Once seminomadic fishermen and hunters wandering the northwestern states in loose bands. Basketry skills were highly developed. Tribal ceremonies centered around food. Highly skilled horsemen who counted wealth in terms of animals.

Government:

General council includes 14 confederated Yakima tribes. In 1944 a council was established to transact business for and on behalf of the tribe. Rules of procedure govern the council were authorized in 1956.

Natural Resources:

Land Management Intensity & Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	55,600	36,800	600
Moderate	24,400	310,320	155,000
Low	33,000	150,876	350,800

Agriculture:	1,018,064	Total Acres Grazed
	ALL	Tribally Controlled
	488,597	Acres of Timberland Grazed
	130,776	Acres of Irrigated Land
	11,902	Acres Tribally Used
	62,036	Acres Used by Non-Indians
	229,243	Estimated Ultimate Irrigable Acres
Land Use:	529,467	Open Grazing
	414,940	Tribally Used

Yakima Reservation (Continued)

Land Use (cont.)	114,527	Used by Non-Indians
	477,105	Commercial Timber
	11,975	Non-Commercial Timber
Timber:	489,183	Total Forest Acres
	7,743.4	Community Timber Volume (MBM)
	477,208	Community Timber Acres
	186,000	Allowable Annual Cut
	146,030	C.Y. 1976 Harvest (MBM)
	1,874	1976 Thinning
	240	1976 Reforestation
	$13,916,938	1976 Tribal Revenue

Minerals:

Sand and gravel production currently on reservation. Volcanic rock has also been quarried. There is a high potential of diatomite, aluminum materials and sodium. Oil and gas reserves.

Business:

A tribal industrial park and there are 6 private industries. The Yakima tribe has an income of $4 or $5 million, most of which is derived through timber sales. This fund is dispensed through scholarships, a large land purchase and improvement program.

Recreation:

Recreation is limited to lower valley area where game is abundant. The tribe sponsors all-Indian rodeo each summer. A historical park, manned by the Army from 1855 to 1859, is being developed at Fort Simcoe. Two libaries and parks are located on the reservation, there are 2 incorporated towns and only 20% of the reservation population are Indian. These two towns have a total population of 25,000 people.

Zia Pueblo
Keresan Tribe

Moses Pino, Governor
General Delivery
San Ysidro, New Mexico 87053

Area:	112,511.12	Total	Population:	464
	112,511.51	Tribal	Labor Force:	130
	.61	Government	Unemployment:	31%

Culture:

Strongly communal in orientation, native language and religion are still strong. Pottery of the Zia Pueblo is extremely famous. Strong agriculturists.

Government:

Based on original status of sovereignty recognized by governments of Spain, Mexico, and the United States, the Tribal Council represents Zia Pueblo in all matters.

Natural Resources:

Land Management Intensity and Productivity

	Management Intensity		
Productivity	Intense	Moderate	Low
High	209	-	1,226
Moderate	-	-	57,411
Low	-	52,938	-

Agriculture:

110,949	Total Acres Grazed
ALL	Tribally Controlled
57,411	Acres of Timberland Grazed
516	Acres of Irrigated Land
209	Acres Tribally Used
307	Idle
1,000	Estimated Ultimate Irrigable Acres

Agriculture Land Use:

Use	All Indian Use Acres	Value
Cultivated Row Crops	32	$3,763
Forage, Hay, Tame Pasture	51	$90,050
Garden Crops	14	$8,160

Zia Pueblo (Continued)

Land Use:		
	53,538	Open Grazing
	ALL	Tribally Used
	900	Commercial Timber

Business:

Annual tribal income is about $55,000 including the advance of interest from the Zia United States Treasury account.

Timber:		
	5,261	Commercial Timber Volume (MBF)
	900	Commercial Timber Acres
	52	MBF Annual Allowable Cut
	126	1976 Cut
	33,939	MBF Inventory
	58,217	Acres of Forest

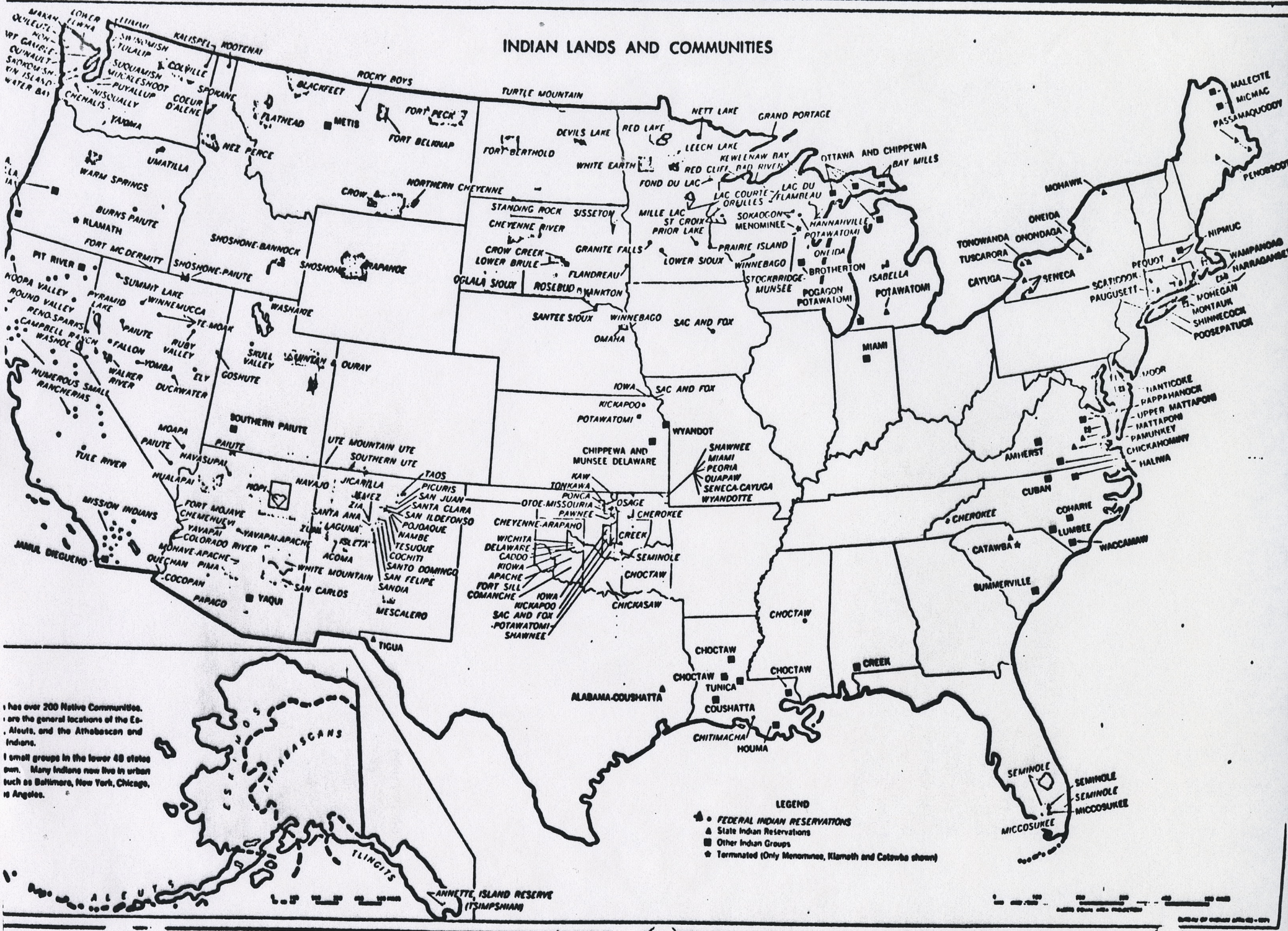
Minerals:

Annual tribal income recently increased by $35,000 as a result from interest of a recent oil and gas lease. Large oil and gas field; CO_2 M-I, copper H-I, geothermal M-I, gypsum H-L, limestone H-L, perlite H-L, pumice H-L, uranium H-L; 27 oil and gas leases on 56,605 acres; 4 mineral leases on 153 acres.

Recreation:

The big day of the year at Zia is August 15, the date of the annual fiesta where the public is made welcome.

INDIAN LANDS AND COMMUNITIES



has over 200 Native Communities.
are the general locations of the Es-
, Aleuts, and the Athabascan and
Indians.

small groups in the lower 48 states
own. Many Indians now live in urban
such as Baltimore, New York, Chicago,
s Angeles.

INDIAN NATIONS WITH KNOWN AND POTENTIAL ENERGY RESOURCES

	PRODUCTION				KNOWN				POTENTIAL					
BE	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	peat	
m Springs														
d River			X				X		X		X	X		
ima									X	X	X	X		
ngton														
a												X		
Pueblo			X				X		X	X	X	X		
									X	X	X			

ermal wells tapped for domestic non-energy use

INDIAN NATIONS WITH KNOWN AND POTENTIAL ENERGY RESOURCES

TRIBES	PRODUCTION				KNOWN				POTENTIAL					
	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	peat	
Pyramid Lake												X		
Red Lake													X	
Rocky Boy			X		X		X		X	X	X			
Quinault											X		X	
San Carlos										X	X			
Santa Ana Pueblo							X			X	X			
Santa Clara										X		X		
Seminole											X			
Soboda												X		
Southern Ute	X		X		X	X	X		X	X	X	X		
Spokane		X				X				X		X		
Summitt Lake										X				
Torres Martinez												X		
Uintah & Ouray		X			X		X		X	X	X	X		
Ute Mountain			X		X	X	X		X	X	X			
Walker River										X		X		

INDIAN NATIONS WITH KNOWN AND POTENTIAL ENERGY RESOURCES

TRIBES	PRODUCTION				KNOWN				POTENTIAL				
	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	peat
Keweenah Bay										X			
Kootenai										X			
Laguna Pueblo		X				X				X			
Leech Lake													X
Los Coyotes												X	
Lower Sioux													X
Makah													X
Mescalero									X				
Mille Lac													X
Moapa												X	
Navajo	X	X	X		X	X	X		X	X	X	X	
Nett Lake													X
Nez Perce									X		X		
Northern Cheyenne			X		X		X		X	X	X		
Osage			X				X		X		X		
Papago										X		X	

INDIAN NATIONS WITH KNOWN AND POTENTIAL ENERGY RESOURCES

	PRODUCTION				KNOWN				POTENTIAL					
RIBE	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	coal	uranium	oil & gas	geothermal	peat	
coma Pueblo					X	X			X	X				
gua Caliente												X		
y Mills										X				
ackfeet			X				X		X		X			
bazon												X		
eyenne River oux	X				X		X		X	X	X			
octaw ississippi)											X			
chiti										X				
copah												X		
ow	X		X		X		X		X	X	X			
ck Valley										X				
ckwater												X		
llon Paiute												X		
athead												X		
n Du Lac													X	
rt Apache										X	X			