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, STUDY TITLE: Social Indicators Study of Alaskan Coastal Villages

REPORT TITLE: Social Indicators Study of Alaskan Coastal Villages VI. Analysis for the Exxon Valdez Spill Area, 1988-1992

CONTRACT NUMBER. 14-12-0001-30300. Technical Report No. 157

SPONSORING OCS REGION: Alaska

APPLICABLE PLANNING AREAS: Shumagin, North Aleutian Basin, Kodiak, Prince William Sound, Cook Inlet, Golf of Alaska.

FISCAL YEARS OF PROJECT FUNDING: FY 1989- FY 1994 (inclusive)

COSTS: FY1989: S84,578; FY1990: $41,498 FY1991: $168,245; FY 1992: $70,387; FY1993 S48,908;FY1994$11,046

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KEY WORDS: Chenega, Chignik, Cordova, Ekwok, False Pass, Karluk, Kenai, Kodiak, Larsen Bay, Old Harbor, Port Graham, Seldovia, Tatitlek, Tyonek, Valdez, Aleutian-Pribilof Islands, Bristol Bay, Cook Inlet, Gulf of Alaska, prince William Sound, Exxon Valdez oil spill, cultural change, economic change. environmental consequences. reliability, validity, multi-method, multi-data sets, protocol. questionnaire, key informant protocol (KIP), AOSIS questionnaire (AQI), structural similarity analysis (SSA), panels, pretest. posttest

BACKGROUND: The original social indicators study was commenced in late 1986 among31 villages in coastal Alaska from Kodiak on the south to Kaktovik on the north as part of the Mineral Management Service's research program aimed at assessing potential human and social impacts of oil-related development throughout coastal regions in which the harvests of naturally occurring resources of the land and sea are central to commercial activity as well as to

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subsistence life styles. Following the foundering of the Exxon Valdez oil spill of March 24, 1989, the social indicators study was enlarged to encompass several villages in the Gulf of Alaska, Prince William Sound, Kodiak Island, and Cook Inlet that were directly affected by the oil. Two Kodiak Island villages in the original sample, Kodiak City end Old Harbor, were incorporated into the spill area sample and provide the link between the original study and the spill area study. This report is the third and final of the spill area study and the sixth and tired in the expanded social indicators study. The data analyzed in this report proved to be reliable, stationary, and devoid of testing artifacts, statistical regression. and history (see TR 156).

OBJECTIVES: The original social indicators project was charged with developing two social indicator systems sensitive to the consequences of OCS activities for persons, their households, their village social, economic, and political organizations, and the environments in which they gain their livelihoods. These systems were developed and validated in TR153 (MMS Report Number 92-003 1) and TR 154 (MMS Report Number 93-0070). The systems for the Exxon Valdez spill area were developed end validated in TR 156 (MMS Report Number 93-0071). Each system is based on a separate methodology and a separate data set: one on a questionnaire instrument. the other on a protocol. In the development of these systems for spill area villages special attention was paid to distinguishing differences between Native and non-Native residents, between villages which possessed well developed infrastructures sod superstructures and those that did not, and between villages which receive more than 60% and villages which receive less thao 40% of their total incomes from commercial fishing-related business. It is anticipated that the social indicators systems developed for the spill area and for the original study area will be used to monitor the social conditions of Alaska's rural communities,

DESCRIPTION: This volume focuses *on* the analysis of two social indicators system developed in ***Social Indicators Study V. Research Methodology for the Exxon Valdez Spill Area.*** Two social indicator systems, one based on a forced-choice instrument (the AOSIS questionnaire instrument or AQI) and one based on an open-ended protocol (the key informant protocol or KIP). Although the data sets for the two indicators system are analyzed separately, the analysis efso compares generalizations between the two systems for similarities and differences. The effects of external events, including the plunge of oil prices and the Exxon Valdez oil spill, are analyzed in conjunction with internal event.% such as the 1oss of employment. and the plunge in the price of Alaskan wild fish, to account for home loan foreclosure ratea, business bankruptcy rates, changes in household organizations and sizes, changes in the espousal of ethical principles, changes in political activities. changes in preferences about what agencies should regulate Alaska's wild resources, and changes in subsistence activities, including harvests and distribution *of* wild resources and by-products from those resources. Three major topics are addressed: economic stability and change, subsistence organization and activities. and the stability and change among social organizations and political activities.

SIGNIFICANT CONCLUSIONS: On a wide variety of economic. subsistence, social, ethical, and political measures prior to the Exxon Valdez spill, differences between Natives and non-Natives in Kodiak Island villages that were oiled by the spill are demonstrated to be significant

and systematic. Following the spill, Native and non-Natives on Kodiak Island and among all other villages in our spill area sample proved to be systematically different in the amounts Of income, number of months employed. amount of education completed. proportion of persons employed in the public sector. proportion of persons receiving unearned income, stability of income, amounts of *income invested into the* harvests of wild resources. the variety and amount of wild resources that are harvested. the manner in which those resources are distributed and consumed, the amounts in which goods, equipment, and income are shared and the persons with whom they sre shared, the practices of contributing labor to relatives and friends, the way in which symbols are attached to the environment. the places to which persons retire, the consequences ofjob or business loss, the expectations for local benefits from oil-related developments, the sizes and compositions of households, rules for membership and behavior in the household, the amount of visiting and dining ss guests in the homes of relatives or friends, cognitive attitudes about whether and what species can be managed, who or what agency should manage them, who beat understands the biologic and abiologic environments, and what consequences are most likely from oil-dated activities. The longitudinal, multidimensional, multivariate analyses of samples and panel demonstrate stability in the principles which distinguish non-Native from Native societies. and the temporary crisis created by the spill demonstrates the differences between Native and non-Native responses to the environmental, political, and economic consequences of the crisis.

STUDY RESULTS: The AQI and KIP indicator systems discriminate between respondents who reside in *Hub* or *Periphery* villages (large villages that serve ss transportation and business centers which have complex infrastructures and distribute services and smell villages with modest infrastructures and meager business development), respondents who reside in *Commercial Fish or NonCommercial Fish* villages *(villages that receive more than* 60% or less than 40% of their total incomes from commercial fishing-related business), and between Natives and non-Natives. It is the last distinction-Native: non-Native--tbat proves to be most powerful in the analysis of a wide variety of economic, subsistence economic, social, political, and religious items. Race/ethnicity differences are so powerful, regardless of village type, that the strongest predictions about income, education, subsistence activities, length of residence in a village, length of residence in Alaska, amount of visiting, amount and variety of types of sharing, variety of political activities, the type of households in which a person resides, the rules for household membership and behavior, ethical principles for the acquisitionand use of skills, cognitive attitudes about whether species can bc managed and who should manage them, and cognitive attitudes about future oil spills can best be predicted if the race/ethnicity of the respondent is known.. The multivariate analyses of the KIP and AQI data sets reveal the items that change *under* conditions of the spill and the conditions that followed the spill by 10 months and 22 months, and the probable causes of those changes.

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