

**North Slope Shallow Coring Program for Natural Gas
Exploration**

**FY2007 Request: \$300,000
Reference No: 41414**

AP/AL: Appropriation

Project Type: Planning

Category: Natural Resources

Location: Statewide

Contact: Nico Bus

House District: Statewide (HD 1-40)

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Estimated Project Dates: 07/01/2006 - 06/30/2010

Brief Summary and Statement of Need:

Recent detailed geologic mapping has identified areas of the North Slope foothills that may hold a new target for industry players exploring for natural gas. Subsurface data in this area is very limited, yet essential to our understanding of resource potential. This CIP request will fund an operation to contract a helicopter-portable shallow coring rig and crew for one summer field season to improve this mapping and structural interpretation at several key locations in the North Slope foothills where complexity and surface cover leave critical questions unanswered. The goal of the project will be to lower exploration risk by providing a more conclusive understanding of the subsurface.

Funding:	<u>FY2007</u>	<u>FY2008</u>	<u>FY2009</u>	<u>FY2010</u>	<u>FY2011</u>	<u>FY2012</u>	<u>Total</u>
Gen Fund	\$300,000						\$300,000
Total:	\$300,000	\$0	\$0	\$0	\$0	\$0	\$300,000

<input type="checkbox"/> State Match Required	<input checked="" type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

Operating & Maintenance Costs:

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	0
Totals:	0	0

Additional Information / Prior Funding History:

This is a new project request.

Project Description/Justification:

Overview. North Slope oil and gas exploration effort is seeing a partial shift in focus to frontier areas along the Brooks Range mountain front. Subsurface data in this area is very limited, yet critical to our understanding of oil and gas resource potential. Recent detailed geologic mapping by industry, state, and federal geologists has identified portions of the North Slope foothills, particularly in the area north of Anuktuvuk Pass, that contains many of the essential components for a new natural gas exploration play. If successful, this play might be similar in reservoir type, structural style, and regional extent to the prolific Alberta foothills fold and thrust belt in the Canadian Rockies.

This CIP request will fund an operation to contract a helicopter-portable, small-diameter coring rig and crew for one summer field season to drill four to ten core holes to depths of no more than 1000 feet at carefully selected locations where geologic complexity and masking by extensive surficial cover leave critical questions unanswered even after exhaustive outcrop-based mapping. At a minimum, these core samples will conclusively determine 1) which rock units are present in the shallow subsurface in areas blanketed by tundra cover, and 2) the structural and stratigraphic relationships of key scattered outcrops to underlying rock units. These answers will provide key constraints for interpreting the geologic history and deeper subsurface structure throughout the play, greatly improving our understanding of foothills gas prospectivity.

Feasibility and cost estimates. This project is considered very feasible. Highly portable, small-diameter coring rigs manned by crews of two to three people are routinely mobilized to remote Alaskan locations for hard rock minerals exploration and delineation programs. This type of drilling is far less expensive than drilling for either conventional oil and gas or coal-bed methane exploration. Likewise, since this would be a small-footprint rig drilling sampling holes, rather than a large rig drilling wells capable of fluid production, the environmental impacts and permitting issues are expected to be dramatically less problematic than with typical oil and gas drilling activities. At least one major petroleum company has used this approach successfully in the past, operating a three year proprietary program to collect shallow subsurface data in various Alaskan basins. Data gathered under this project would be publicly available, and of great value to planners and researchers in government and academia, as well as exploration companies.

Because of the fairly routine nature of these operations, the project can be planned reliably based on previous contractor experience. Cost estimates provided here are preliminary due to the minimal amount of project scoping undertaken to this point, but are based on discussions with one such remote drilling contractor with extensive Alaskan experience. Actual project costs will depend on the number and depth of core holes drilled, the distance between successive holes, and the types and numbers of analyses conducted on the samples. Cost projections assume planning and pre-commitment charges in FY07, followed by the actual drilling program in FY08, wrapping up with largely analytical and interpretation costs in FY09. These core samples would be excellent candidates for a variety of useful analyses, including biostratigraphic age and depositional environment determinations, geochemical source rock quality and thermal maturity analyses, and geochronologic age dating. The technique could also be used specifically for stratigraphic studies, for example, to fill in continuous stratigraphic information through non-exposed areas between detailed stratigraphic sections measured in outcrop.

Specific geologic example. One specific geologic problem that could be resolved by this project is whether scattered outcrops of pre-Brookian strata in the disturbed belt near the Tuktu Escarpment represent continuous but complexly deformed thrust sheets (allochthons) emplaced tectonically over broad areas, or whether they represent independent masses that slid off of the growing Brooks Range into the Colville Basin due to gravity-driven detachment faulting and chaotic mass wasting processes (olistostromes). The exploration implications of these two models are drastically different. The presence of far-traveled allochthons this far north in the disturbed belt implies much greater lateral and vertical predictability of the rock sequence at depth, and would argue in favor of prospective Lisburne Group reservoirs in the subsurface. On the other hand, if the olistostrome model were correct, geologists would have far less compelling evidence for the presence of Lisburne Group carbonate reservoirs beneath the disturbed belt.

Why is this Project Needed Now:

The present is an excellent time to begin planning this project. Oil and gas companies are actively studying emerging plays in the North Slope foothills gas play. The commerciality of an ANS gas pipeline is now widely accepted, and many expect foothills gas discoveries could be linked to markets within the next ten years. This project benefits the state in two ways. It would provide oversight agencies crucial data for improved resource assessment. Additionally, it could help open a new foothills gas play, promoting exploration investment and laying the groundwork for eventual production revenues. Both are needed in the near term.

Specific Spending Detail:

Line Item Expenditures:

Personal Services	----	n/a
Travel	\$20,000	Contractor & state personnel travel, accommodations, logistics in field
Services	\$175,000	Contract drilling rig, 3 person crew, helicopter support, mob/demob
Capital Outlay	\$100,000	Drilling consumables, fuel, etc.
Commodities	\$5,000	Misc project materials

Project Support:

Broad support can be expected from 1) energy industry companies, 2) Native regional and village corporations with stakeholder interests (e.g., ASRC, Nunamiut), 3) natural resource management agencies in the State and Federal government, including DGGs, USGS, and BLM, and 4) research institutions, particularly UAF.