Working Document of the NPC Study:
Arctic Potential: Realizing the Promise of U.S. Arctic Oil and Gas Resources
Made Available March 27, 2015

Paper #7-14

FUTURE MARINE AND AVIATION SUPPORT BASES SUPPORTING CHUKCHI SEA/ARCTIC OPERATIONS

Prepared for the

Technology & Operations Subgroup

On March 27, 2015, the National Petroleum Council (NPC) in approving its report, *Arctic Potential: Realizing the Promise of U.S. Arctic Oil and Gas Resources*, also approved the making available of certain materials used in the study process, including detailed, specific subject matter papers prepared or used by the study's Technology & Operations Subgroup. These Topic Papers were working documents that were part of the analyses that led to development of the summary results presented in the report's Executive Summary and Chapters.

These Topic Papers represent the views and conclusions of the authors. The National Petroleum Council has not endorsed or approved the statements and conclusions contained in these documents, but approved the publication of these materials as part of the study process.

The NPC believes that these papers will be of interest to the readers of the report and will help them better understand the results. These materials are being made available in the interest of transparency.

The attached paper is one of 46 such working documents used in the study analyses. Appendix D of the final NPC report provides a complete list of the 46 Topic Papers. The full papers can be viewed and downloaded from the report section of the NPC website (www.npc.org).

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Topic Paper

(Prepared for the National Petroleum Council Study on Research to Facilitate Prudent Arctic Development)

7-14	Future Marine and Aviation Support Bases Supporting Chukchi Sea/Arctic Operations
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Date: July 30, 2014	**Revision:** Final

SUMMARY

Industry has a successful history of exploration in the Beaufort and Chukchi Seas. This history is marked with numerous successes and other experiences which, when aggregated and fully considered support the concept that offshore, arctic oil exploration, development and delivery is achievable. However, this is not without limitations. These include lack of proximal deepwater ports and requirements for sharing of existing infrastructure, like airports. The latter requiring cooperative arrangements with existing commercial locations which can result in a competition for scarce resources. As prospects prove viable, opportunities to develop dedicated marine and aviation support basing need to be planned and implemented to support long term development and delivery operations. A rigorous SWOT analysis identified 3 opportunities worthy of consideration from both a joint venture (private/private) and public/private partnership perspective.

PURPOSE

The purpose of this topic paper is to provide background on marine and aviation support basing options as they apply to Chukchi Sea exploration and development operations.

BACKGROUND/ONGOING RESEARCH

The history of hydrocarbon exploration and development in Alaska is marked with numerous successes and other experiences which, when aggregated and fully considered support the concept that offshore, arctic oil exploration, development and delivery is achievable. However, additional opportunities abound to support this end. No other state in the union comes close to matching Alaska's access to major bodies of water. However, across the vast coastline, few viable deepwater ports exist to support the vessels required to conduct offshore exploration and development. Suitable deep water ports with capacity to support exist only in the southern part

of the state and the Aleutian Islands. Analyzing alternatives is a compromise – balancing pros against cons to achieve the best possible solution to meet the needs of Industry.

Historic operations have served to enhance our understanding of what is required to safely and successfully operate in the Arctic. This understanding has been progressive with lessons learned and in some cases, forgotten. The tendency is to plan to what is known to have been true during recent operational seasons. The natural result of this approach is to work with the "devil we know" and resist new opportunities. By looking back further into the industry's rich history in Alaska, you start to discover logistical concepts and approaches that would tend to suggest alternatives to the status quo. This awareness serves to provide opportunities when deliberately planning exploration and development operations in the future years. New ways of thinking are particularly important to support growth in Alaskan Arctic offshore oil and gas activity.

DISCUSSION/POTENTIAL AREAS OF FURTHER RESEARCH

New solutions can be found by taking a disciplined approach to logistics and infrastructure. In this regard, an infrastructure team should start with a clean sheet of paper to consider and develop future infrastructure requirements in Alaska. In many cases, we may have already discovered the best support options. Equally true, in many cases, it is likely that we have not. The analytic approach must utilize consistent planning factors. Key planning factors include the following:

1. Capacity. Does infrastructure provide the breadth and depth to support current and future operational requirements?
2. Geographic Position. Is infrastructure most efficiently positioned to support current and future operations?
3. Multi-mode Access. Does infrastructure provide 2 or more means of transportation modes (air, land, sea, and rail) to support current and future operations?
4. Defined and Predictable Approaches. Does infrastructure have published approaches for multi-modal access?
5. Cultural Understanding and Social Performance. Does industry have the cultural understanding to operate as good stewards within a community and does it robustly protect, communicate and maintain a positive relationship with the host community during current and future operations?

These planning factors serve Prudent Development. They will help to ensure the adequacy of alternatives and assist in identifying the best possible solutions to logistics and infrastructure requirements. Moreover, given the cost of infrastructure required for major marine and aviation support for exploration and development operations, it is apropos to invest the analytic rigor required to get it right the first time rather than approach the requirement with a series of near

misses. In this sense, the approach needs to adopt a "Build once, use many" mindset that will attract joint venture partners once the richness of the predicted reserves are proven.

To adequately understand the potential of known marine and aviation support bases that can support industry's exploration and development objectives, the SWOT methodology should be utilized to quantitatively and qualitatively analyze each opportunity.

SWOT/TOWS Methodology. A SWOT analysis is a structured planning method used to evaluate the **s**trengths, **w**eaknesses, **o**pportunities, and **t**hreats involved in a business venture. It involves specifying the goal of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieve that goal.

Setting objectives should be done after the SWOT analysis has been performed. This would allow achievable goals or objectives to be set for the organization.

- **S**trengths: characteristics of the business or project that give it an advantage over others.
- **W**eaknesses: characteristics that place the business or project at a disadvantage relative to others
- **O**pportunities: elements that the project could leverage to its advantage
- **T**hreats: elements in the environment that could cause trouble for the business or project

Identification of SWOTs is important because they can inform later steps in planning to achieve the objective and associated tasks/subtasks.

SWOT Analysis. An analysis of SWOT is also known as TOWS analysis where threats and opportunities are matched against weaknesses and strengths. Once complete, an accurate and attainable list of objectives can be developed with a higher probability of success in achieving the identified goals. For example, a potential objective might be the use of the Peard Bay DEW (Defense Early Warning) Line site as an aviation support terminal. Once the analysis is conducted, it will help to prioritize whether this potential objective as being attainable, and ultimately the goal as being attainable. It is important to understand the match-ups during a TOWS analysis. Strength versus Opportunity is advantage. Strength versus Threat is avoidance unless cost-benefit analysis encourages risk acceptance and mitigation planning. Weakness versus Opportunity is neutral, but can be planned to an advantage. Threat versus Weakness must be avoided. Once complete, the decision makers should consider whether the objective is attainable. If the objective is *not* attainable a different objective must be selected and the process repeated.

Current and Future Marine and Aviation Support Bases in Alaska.

Current Marine and Aviation Support Bases in Alaska. Include Valdez, Seward, Dutch Harbor, Kotzebue, Barrow, Deadhorse and Pt Thompson. When you consider only Outer Continental Shelf exploration and development, the major support bases are

reduced to Dutch Harbor, Kotzebue, Barrow and Deadhorse. All of these bases are accessible by at least 2 modes of transportation and have historic operational performance.

Future Marine and Aviation Support Base Opportunities in Alaska. Using the SWOT methodology described above, other opportunities avail themselves and can be considered as future objectives including:

- **Adak**. The former Naval Air Station in Adak, AK in the Aleutian Islands should be strongly considered as a viable marine and aviation support base for future exploration and development operations. With over 4000 feet of total dock space in 6+ fathom waters, 7,500'+ of intersecting runways, and adequate laydown and dry storage potential, Adak could be developed into a major marine and aviation support base for a Joint Industry Venture to explore and develop Arctic OCS oil reserves.
- **Port Clarence**. Situated approximately 100nm southeast of the Bering Strait, Port Clarence is an unexploited opportunity to serve as a marine and aviation support base during the operational season. Largely ice-free by mid-June with waters deep enough to support Offshore Support Vessels (OSVs) in proximity to the east, Port Clarence becomes a very attractive resupply and crew change opportunity for exploration and development operations in the Chukchi by cutting the traditional transit distance to Dutch Harbor by two thirds. Coupled with potential use of the former USCG Loran facility runway and the haul road from Nome, Port Clarence supports three modes of transportation.
- **Wainright DEW Line Site**. The former Defense Early Warning Site approximately five miles south of the city of Wainright, AK and 70 miles west of Barrow, AK is an attractive opportunity to move both marine and aviation support activities within 75 miles of the Chukchi exploration and development operations. This site, currently under lease with an Alaskan Native Corporation and will eventually transfer to the City of Wainright, will initially allow Search and Rescue support to move within 75 miles of the area of operations and cut response times in half. By developing this former DEW Line Site, industry keeps its operations five miles from the city and its inhabitants. Impacts to subsistence and whaling activities are effectively mitigated. Moreover, employment opportunities for this community are anxiously awaited. Coupled with potential pipeline routes, Wainright becomes a very attractive opportunity for all entities: private/private, public/private.

RECOMMENDATION(S)

The overall intent of the chapter on Logistics and Infrastructure is to promote a greater understanding by state and federal agencies of industry's issues related to operating in the remote environment in order to inform them as how best to deploy fiscal resources to support prudent development. Safe and responsible hydrocarbon exploration in the Arctic is achievable today, but is challenged by the lack of viable deepwater ports and suitable aviation support bases.

These challenges can be best addressed via cooperation across all partners (Federal, State and Local Governments; and Industry) to position for the best possible support base alternatives for future operations.

Multidimensional problems require multidimensional solutions. "This effort cannot be solved or shouldered by a single entity"[1]. Therefore, relationships at every level (International, private/private, and public private) become key enablers that will position the Federal Government towards responsible and successful exploration and development operations in the future.

The requirement for major marine bases to support oil and gas operations is significant in the exploration phase and will grow exponentially as Industry transitions to development and production. "There is no point in talking about prudent development without prudent exploration."[2] Currently, marine and aviation support bases are co-use with other commercial and local entities requiring these services. The impact of energy exploration operations brings both positive and negative impacts to local communities. Positives are derived from significant economic benefit from leasing arrangements with local corporations and governments. Negatives manifest themselves in competition for resources (dock and hotel space, fuel requirements, waste and material throughput, and community interaction with contract workers) have to be carefully understood, planned and managed. In this regard, alternatives to the current status quo should be developed and considered for future resource planning.

The sites discussed above move the impact, both positive and negative, to areas that are currently underutilized or undeveloped. With thoughtful and deliberate planning using a Joint Venture approach, these areas are potentially key support considerations for future energy exploration and development operations in the Arctic.

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[1] Bill Scott, Chevron Corporation, 18 June 2014 teleconference Shell/Chevron
[2] Bill Scott, Chevron Corporation, 18 June 2014 teleconference Shell/Chevron