

Spectrum Alaska, LLC ROW Lease Application

Right-of-Way leasing Act

AS 38.35.050

APPLICATION FOR PIPELINE RIGHT-OF-WAY LEASE

1. Date of Application:

October 3, 2012

2. Name and Address of Applicant(s):

Spectrum Alaska, LLC
8505 S. Elwood Bldg. 123
Tulsa, Ok. 74132

The contact for this application:
Ray Latchem, President of Spectrum Alaska, LLC
Office: (918) 298-6660
Fax: (918) 298-6662
Email: ray@latchem.com

PART I

PROPOSED ROUTE

3. Point of Origin:

Just south of Flow Station #3, the Prudhoe Bay Unit, Coordinates N 5,943,480.00; E 677,355.00 Point table NAD27 ASP Zone 4

4. Point of Termination:

1,100 feet south-southeast of the origin. Coordinates N 5,942,450.00; E 677,730.00 Point table NAD27 ASP Zone 4.

5. Total proposed length:

1,100 feet

6. Total length proposed to cross state lands:

1,100 feet



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- 7. Attach a map or plat showing the proposed alignment of the centerline of the pipeline right-of-way and indicate the areas of state upland ownership throughout the length of the proposed right-of-way.**

See attached map by Bell and Associates Land Surveyors. The entire ROW is on State owned lands.

- 8. Proposed crossings of streams and other bodies of water. (For each crossing indicate the width and depth of the stream or water body.)**

There are no stream or water crossings.

- 9. Attach a map or plat showing the proposed alignment of the centerline of the pipeline right-of-way where it crosses the beds of streams or other bodies of water.**

N/A see #8 above.

- 10. Width of the proposed temporary right-of-way required for construction for each segment of the pipeline route on state lands.**

100 feet

- 11. Size and location of any sites, in addition to the proposed pipeline right-of-way, requested on a temporary basis during construction.**

N/A

- 12. Width of the proposed right-of-way required for operating the completed pipeline for each segment of the pipeline route on state lands.**

35 feet

- 13. Size and location of any sites, in addition to the proposed pipeline right-of-way, requested for the operation of the completed pipeline.**

- a. Site 1 will be a regular square parcel 800' x 800' (approximately 14.7 acres) with the following corner coordinates:
 - i. Corner 1: N 5942226.27 E 677112.69
 - ii. Corner 2: N 5942499.75 E 677864.50
 - iii. Corner 3: N 5941747.94 E 678137.97
 - iv. Corner 4: N 5941474.47 E 677386.17
- b. The above mentioned site will have two 40 foot wide driveways connecting it to the Spine Road. These are depicted in the attached Project Description.
- c. The proposed pipeline, pad, and driveways are all located in the West half of Section 3, Township 10 North, Range 14 East, of the Umiat Meridian

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14. Legal description of state lands within the proposed pipeline right-of-way that are reserved or committed to any purpose. (For each tract of such state lands, state the purpose to which it is reserved or committed)

The connection point for the pipeline lies within the Endicott Pipeline ROW lease ADL 410562. The subject pipeline will exit the Endicott Pipeline ROW on a perpendicular line. The Endicott pipeline parallels many PBU flow lines including the Field Fuel Gas header that the subject pipeline will be connected. BP Alaska, as the operator for both the PBU and the Endicott Pipeline, has authority for both and will be party to the tie in agreement that will authorize the connection and crossing the Endicott pipeline if needed. The method for the tie in and crossing if needed will be developed in conjunction with BP Alaska during the detailed engineering phase of the project.

PART II

PROJECT DESCRIPTION

15. Substance(s) to be transported:

**Table 1: Typical Composition of Field Fuel Gas from Prudhoe Bay
Data from the GPB Laboratory Report Sample number PC52913 taken on
January 17th, 2011 at the Pump Station #1 Meter #505**

Component	Untreated Natural Gas Molecule %
C1 (Methane)	80.361
C2 (Ethane)	5.172
C3 (Propane)	1.615
IC4 (Isobutane)	0.083
NC4 (Butane)	0.131
IC5 (Isopentane)	0.015
NC5 (Pentane)	0.016
C6+ (Hexane & heavier)	0.056
CO2 (Carbon Dioxide)	11.929
N2 (Nitrogen)	0.622

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16. Size, engineering and design characteristics and amount of each type of pipe to be used:

Approximately 1,100 feet of 8 inch diameter API 5L X 65. Wall thickness to be determined during detailed engineering phase. Designed and built to comply with 49 CFR 192.

17. Size, number and location of pumping, compressing, heating or refrigeration stations:

One LNG production plant. Initial production capacity of approximately 100,000 gallons per day, future expansion for up to 400,000 gallons per day provided for in sizing certain components such as the gas supply service line and gas treating equipment.

18. Transportation capacity of the proposed pipeline:

Up to 50 MMscf per day.

19. Estimated life of the pipeline:

The minimum design life of the Spectrum Alaska LNG project will be 30 years and will be incorporated into the applicable design criteria for the short supply pipeline and the LNG production facility. A 30-year design life does not indicate that the LNG production plant and pipeline will be used up, failure-prone, or requiring replacement at the end of the lease. Engineering design life is established from a combination of technical, regulatory, economic, and commercial considerations. There are various definitions of design life; however, for the purposes of this lease it can be defined as the period over which the systems, components, and structure are required to perform their primary functions with acceptable safety, regulatory, and environmental performance, and with an acceptable probability that they will not experience large failures, require extensive replacements, or need significant repairs.

20. Planned temperature at which each substance will be transported and whether it will be heated or refrigerated to maintain that temperature.

Fuel gas temperature varies but is generally above freezing. The gas is generally water dew point conditioned to -20 degrees F and ambient temperatures may drop below this so the pipeline will be insulated. No temperature control will be used on the pipeline.

21. The pipeline will be (check as appropriate):

Supported over the surface along its entire length.

22. Describe the methods to be employed for partially or completely burying any portion.

If the pipeline has to cross the construction road adjacent to the PBU and Endicott Pipeline, it will be done in a conventional elevated road crossing method where a larger diameter

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casing is installed above tundra grade but within the elevated road to provide a conduit for the pipeline.

23. Describe any bridges, trestles, other structures or berms for the support of the proposed pipeline.

The pipeline will be supported on VSMS over its entire length. Depending on detail design work at its origin, there may be a crossing of a construction road. If so, this will be a conventional “cased” crossing where a larger heavy steel casing is installed in the elevated road bed that provides protection for the pipeline inside the casing. This casing will be “day lighted” at both ends, that is, the casing will be above grade or top of tundra.

24. Describe the proposed method for all stream crossings and crossings of other bodies of water.

N/A

25. Describe the proposed methods for grades, cuts or fills.

Fill. Up to 100,000 cubic yards of locally mined gravel will be placed at the project’s LNG plant site at the terminus of the pipeline to construct the gravel pad and its driveways that provide access to the Spine road. Additionally, drilled and set piling will be installed for facilities foundations. Both of these are very typical construction methods in the area.

26. Discuss planned facilities for spill or leak prevention and containment.

Sound engineering design will be used to minimize the potential for leaks. The Pipeline will be designed, built and operated to 49 CFR 192 standards and patrolled regularly by plant operators. The pipeline is sufficiently short so that any significant leak will likely be noticeable from the plant. Additionally, significant leaks will trigger low pressure alarms within the adjacent plant. The plant is staffed 24-7 and operators have the ability to control the first shutdown valve at the connection point to the Prudhoe Bay Unit field fuel gas system. A back flow prevention (check valve) valve will be installed at the terminus of the service line to prevent any reverse flow during a potential leak.

27. Proposed access roads, airstrips, heliports, float plane facilities, communication facilities, storage sites for equipment and materials, material sites, and material disposal sites, whether planned for construction, operation or maintenance support:

The LNG production facility will be built on an 800 foot by 800 foot square gravel pad as is common for the area. The pad will be connected to the Spine road by two short driveways. These driveways will be approximately 165 feet long and 40 feet wide. This is a relatively small, localized project and all support needed for it will come from the established nearby industrial town/community of Deadhorse. Liquid and solid waste hauling is provided by the North Slope Borough.

28. Size, number, approximate location and planned duration of field camps:

There will be no field camps for this project.

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29. Size, number and approximate location of housing for personnel operating or maintaining the pipeline:

The LNG plant and pipeline will be operated on a 24-7 basis and have offices and living quarters at the plant location. This single camp will be a typical small North Slope camp arrangement that can house up to 20 people. Liquid and solid waste hauling will be provided by the North Slope Borough. Water supplies include the North Slope Borough and in the future the nearby unnamed lake once permits and facilities are in place. Additional information can be found in the attached Spectrum Alaska LNG Project Description.

30. Size, number and approximate location of health care facilities:

Standard industrial grade first aid equipment will be maintained at the camp. BP has historically provided ambulance and paramedic/physician assistant grade service. Additionally all operators of the LNG plant will be trained in Red Cross CPR and First Aid procedures.

31. Approximate number of persons to be employed during construction:

10-15 for the pipeline, 20-30 for the LNG plant.

32. Approximate number of persons to be employed to operate and maintain the pipeline:

12, this includes the operation of the LNG plant.

33. Planned commencement date for construction:

July, 2013

34. Estimated construction time:

1 year

35. Planned commencement date for operations:

August 2014

36. Estimated cost of materials:

\$22,000,000

37. Estimated cost of construction and installation:

\$8,000,000

38. Estimated annual cost for operations and maintenance:

\$3,000,000

Part III

AVAILABILITY OF INTERCONNECTIONS, TERMINAL FACILITIES AND STORAGE FACILITIES

39. Describe how the proposed pipeline will connect with planned field gathering systems, if any.

This 8" pipeline will connect only to the 24" Prudhoe Bay Unit fuel gas distribution system. This 24" fuel gas pipeline originates at the PBU Central Gas Facility and provides fuel gas to the entire PBU, Trans Alaska Pipeline pump stations 1-4, as well as Norgasco and interconnections with fields to the west. The actual connection will likely involve a 6" diameter hot tap on the 24" pipe. After the valves are installed on the tap, the pipe will transition to 8" diameter.

40. Discuss the technical and economic feasibility of providing connections with other field gathering systems at intermediate points along the proposed pipeline.

This is a conditioned fuel gas pipeline, not a raw gas gathering pipeline. Raw gas is not compatible with this pipeline.

41. Discuss the technical and economic feasibility of providing connections or interchanges with other pipelines at intermediate points along the proposed pipeline.

This pipeline is a short service line and there will likely be no other users. Due to its short length, it will not be economic to tap into it along its length. Should any other party wish to connect, it will be cheaper to connect at the closest end (less than 550 feet at the most).

42. Describe the location, area and capacity of proposed tank farms or other storage facilities.

There will be no storage of natural gas at the LNG plant. There will be up to 400,000 gallons of LNG storage in conventional cryogenic storage vessels at the LNG plant.

43. Provide locations of and describe any terminal delivery facility of the proposed pipeline.

The pipeline will terminate at the inlet to the LNG plant. There will be a metering facility between the pipeline and the LNG plant.

44. Discuss the technical and economic feasibility of providing delivery facilities at intermediate points along the proposed pipeline.

From a technical point of view, no intermediate facilities are practical due to the short length of this pipeline. An existing flanged connection would be available less than 550 feet away, at the furthest.

PART IV

SAFEGUARDS FOR PERSONS, PROPERTY, THE PUBLIC, AND THE ENVIRONMENT

45. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause a hazard to the safety of workers on the pipeline project.

Worker (no matter who their direct employer may be) safety is the number one priority with the individuals that own the company. Work place safety literally starts at the top of this project with its 3 primary owners. Each has worked as tradesmen on the North Slope in their earlier years and have supported the transformation in the industry with respect to the advancement of safety in the work place. Each of the owners, as managers of other enterprises that operated in and continue to operate on the Slope place the highest priority on each worker going home safely at the end of their shift. These are deeply rooted personal concerns that are in addition to the numerous economic drivers of safety in the work place such as reduced insurance cost with no LTAs, etc. Spectrum Alaska is one of the few companies that has an internal practice of not permitting any employee to perform a task that the owners are not willing to do or likely have done in the past themselves.

The Spectrum Alaska project will be designed, constructed, operated and maintained in full compliance with industry current standards. These include but are not limited to 49 CFR 191, 192, 193, 195 as administered by the Pipeline and Hazardous Material Safety Administration (PHMSA) under the US Department of Transportation, the National Fire Prevention Association codes for LNG facilities, the American National Standards Institute (ANSI) codes B-31.1, B-31.2, B-31.3, B-31.8. All requirements of 49 CFR 192 and 193 and their referenced Codes will be adhered to, providing protection to workers from hazards associated with the facilities.

Spectrum is developing a Project Quality Assurance Program that will define how compliance with applicable Codes, Standards, Regulations, Permit Requirements, and design specifications will be achieved. Further, Spectrum will voluntarily comply with codes and industry standards that may not be required, but that Spectrum finds will provide additional safety and security for its employees and facilities.

In addition to the remote nature of the location and its restricted access, the facilities will have conventional fire protection systems in certain buildings like the camp and maintenance shop. Heat, smoke, and gas detectors will be installed where appropriate and connected into a state of the art monitoring system. Kitchen fire extinguishing

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systems and conventional firefighting equipment will be installed in normally occupied areas, such as the camp kitchen and the maintenance shop. Spectrum employees will be trained in basic firefighting using the available equipment.

For contracted work Spectrum will require contractors to submit quality and safety management plans for review. The review will ensure that contractors will, at a minimum, meet Spectrum requirements. Where a contractor has more stringent quality and safety or inspection requirements than Spectrum, the contractor will comply with the provision of its own manual. Similarly, where Spectrum requirements are more stringent than the contractor's standard, the contractor will be required to comply with the provision of Spectrum Quality Assurance and Safety Program.

Construction phase:

A compliance plan for construction will be developed with the team of contractors hired for construction. The basis for plan development is that all accidents are avoidable with a goal of Zero Accidents. The construction plan will include:

- Emergency response plan that specifically addresses:
 - Construction accidents
 - Injuries
 - Fatalities
 - Hazardous material spills
 - Fires
 - Confined space entry
- Environmental Compliance Plan

Operations and Maintenance Phase

Spectrum will adapt and expand the Quality Assurance Program to include the specific features of the Spectrum facilities. An Emergency Response Plan will be prepared that deals with:

- Emergency Shutdowns of Pipeline and Process Plant
- Fire or explosion
- Pipeline rupture
- Hazardous material spill
- LNG spill
- Earthquake
- Severe weather events
- Terrorist threat
- Serious injury or illness
- Fatality
- Communications loss

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Copies of permits and operating limitations will be maintained in the Spectrum Control Room. A compliance matrix will be part of the Standard Operating Procedures established for Spectrum. The plan will include internal auditing by Spectrum management, and third party inspection as required.

46. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause a hazard to the public health and safety.

In addition to the information contained in the answer to #45 above, the site for the Spectrum Alaska LNG Project was carefully selected to prevent any threats to the general public and any other facilities in the area.

The site has no immediate neighbors and will likely never have any due to the fact it is located between a lake, pipelines, power lines and a road. These existing features all but preclude any adjacent manned developments. Further, many other sites exist in the vicinity, but are a safe distance from the Spectrum plant that could be used by other developers if the demand arises in the future.

The site is also beyond the PBU traffic security check point that prevents the general public from traveling in the area. Only field workers are permitted to pass the check point, others have to be escorted. Spectrum's hazards analysis indicate that catastrophic problems are contained on its site, away from the public's access.

The gas processing building and facilities are equipped with an Emergency Shut Down (ESD) system that is activated by automated systems or manually tripped by any one of several hand stations located at exits. There will be no firefighting response to the gas processing facilities in the event of a fire. The ESD system closes the gas entering the plant and any fire will be allowed to burn until the fuel is consumed. No combustibles are used in the construction, the process fluids are the only fuel.

The buildings are located safe distances from each other to prevent the spread of fire between any two structures. Spectrum will brief the local volunteer firefighting brigade about the facilities and the plan to only respond to fires at the non-processing facilities.

47. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause serious and irreparable harm or damages to public or private property.

Please see the answer to #46 above. Fundamentally, the facility is designed to contain the worst case scenario, within its leased area.

48. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause serious and irreparable harm or damages to vegetation or timber.

There is no timber in the area. The vegetation consists of tundra grass. It is not known to burn. The only liquid hydrocarbon that doesn't rapidly vaporize that may be present is diesel fuel. If any is stored on site, it will be in a manner that uses industry standard containment. Any spillage will be contained to the gravel pad. It should be noted that Spectrum's goal is to compete with diesel fuel and plans to completely avoid storing any at the site. For demonstration purposes, Spectrum will convert virtually all equipment that normally runs on diesel to run on LNG or CNG.

49. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause serious and irreparable harm or damages to fish or other wildlife or to their habitats.

There appear to be no specific threats to fish or wildlife as a result of construction or operations of the pipeline or LNG Liquefaction Plant. The long-term presence of existing industrial facilities and activities in the general area deter wildlife presence in the area.

Spectrum Alaska will include in its Standard Operating Procedures the requirement to comply with all Permit Conditions and regulations of the North Slope Borough.

Spectrum Alaska will confer with the Alaska Department of Fish and Game, and if needed, will develop a human-carnivore interaction plan in accordance with Alaska Department of Fish and Game guidelines. However, Spectrum's management has combined over 80 years of experience on the North Slope, and has learned the basics that if the site is kept neat and clean, wastes are properly managed, food stored correctly, and common sense applied, interaction with other carnivores is kept to a minimum.

50. Describe your plans for restoring areas of vegetation or timber damaged or harmed directly or indirectly by the construction, operation, maintenance or termination of all or any part of the proposed pipeline.

The short pipeline will either be constructed from an ice road, in accordance with Alaska Department of Natural Resources approved procedures, or from a narrow construction road within the ROW, depending on the time of year. This mitigates damage to the underlying tundra. In the event of damage to tundra, it will be repaired as directed by the Alaska DNR. The LNG plant will be built on piling above a gravel pad as is the standard construction method in the area.

51. Describe your plans for abating erosion and restoring areas eroded as a direct or indirect result of the construction, operation, maintenance or termination of all or any part of the proposed pipeline.

Erosion is not expected as a result of the construction, operation, and maintenance of the proposed pipeline and LNG plant. The pipeline will be constructed from an ice road during the approved tundra travel season or during the summer months from a narrow construction road, in accordance with Alaska DNR approved procedures.

52. Describe your plans for quality control and your procedures for inspection and testing the pipeline, both during and after construction.

The pipeline is designed in accordance with 49 CFR 192. This federal regulation incorporates by reference ASME B31.8 – standard of Gas Transmission and Distribution Piping Systems and API 1104 – Welding of Pipelines and Related Facilities. Quality Control and inspection and testing plans will be developed in full compliance with these codes. The pipeline will be operated in accordance with 49 CFR 192, including the qualification of operators and pipeline integrity management. The LNG plant will be constructed according to the ASME B-31.3 code as well as NFPA 59A. There are numerous other codes used that deal with electrical, mechanical, and HVAC systems that will all be met in the final design and construction of the plant.

53. Describe your plans to ensure compliance by your contractors and subcontractors with the safeguards and stipulations of the right-of-way lease, if issued.

Spectrum Alaska is developing a Project Quality Assurance Program that will define how compliance with applicable Codes, Standards, Regulations, Permit Requirements, and design specifications will be achieved. At a minimum, Spectrum will provide copies of all safeguards and stipulations of the right-of-way lease to its contractors and require them to execute agreements indicating they have received, understand, and will comply with them. Further, the agreement will hold them liable for any economic or other penalties that might come from violations of the safeguards and stipulations.

For contracted work, Spectrum will require contractors to submit quality management plans for review. The review will ensure that contractors will, at a minimum, meet Spectrum's requirements. Where a contractor has more stringent quality of inspection requirements than Spectrum, the contractor will comply with the provisions of its own manual. Similarly, where Spectrum requirements are more stringent than the contractor's standard, the contractor will be required to comply with the provision of Spectrum LNG Quality Assurance Program.

Qualified contractors will be selected through a pre-qualification program. Only those contractors with complete safety and quality management programs available for review and demonstrated records of safe, responsible, compliant operations will be considered.

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Compliance with all permit and right-of-way conditions will be a provision of each construction contract. Contracts will require a flow-down provision to any subcontractors used by contractors.

Each contract will start with a kick-off meeting to ensure that all terms and requirements are understood, and that the contractor has a plan for compliance prior to allowing start of construction.

Spectrum LNG will have a representative on site during construction to verify compliance.

PART V

SPECIAL SAFEGUARDS FOR NATIVES AND OTHERS

SUBSIDING ON THE BIOTIC RESOURCES OF THE GENERAL AREA

OF THE PROPOSED RIGHT-OF-WAY

- 54. Describe your plans and procedures to protect the interests of individuals living in the general area of the proposed right-of-way who rely on the fish, wildlife and biotic resources of the area for subsistence purposes.**

The LNG plant is located in the Prudhoe Bay Unit oil field, in an area that has access restricted by the Prudhoe Bay Unit Operator. It will not affect any communities or known subsistence areas.

PART VI

FINANCIAL INFORMATION

- 55. Attach an annual financial statement and balance sheet for each applicant, prepared in accordance with generally accepted accounting principles for each of the applicant's three fiscal years immediately preceding the date of this application. The financial statement must be certified by a firm of reputable and independent Certified Public Accountants.**

Per AS 38.05.035(a)(8)(D) (Alaska Land Act) we respectfully request that all financial documents related to Spectrum Alaska, LLC and Spectrum LNG, LLC be held confidential and not be released as public record per USC 552(b)(4).

The financial information provided is for the purpose of demonstrating the financial ability our organization has in funding and the long-term operation of our proposed pipeline project. We consider this information privileged and to be used during the application process only.

PART VII

OTHER INFORMATION

56. Name and address of the proposed general contractor(s) for constructing the pipeline:

CONAM Construction Company
301 W. Northern Lights Blvd.
Suite 300
Anchorage, Alaska 99503

58. Name and address of the proposed operator of the pipeline:

Spectrum Alaska, LLC
8505 S. Elwood Ave.
Building #123
Tulsa, OK 74132

59. Other information you believe may aid in the consideration of this application.

A Project Description is attached for additional information. A project design basis document will be provided in the near future that will provide greater technical detail.

Spectrum Alaska's Small Scale LNG Project Description

Small scale LNG is defined as LNG that is transported by truck versus large scale which is transported by ships. A truck carries about 1 MMscf of natural gas but in liquid form (about 12,000 gallons) and a ship carries about 3,000 MMscf.

Small scale LNG is now growing into a large scale business. This growth is driven by the large price differential between natural gas and distillate fuels worldwide. A significantly larger differential exists in the US due to the glut of gas production in recent years from the shale gas boom that has depressed gas prices.

Alaska's North Slope has an even greater price differential due to the added cost of diesel transportation. While the Lower-48 states may see \$4 diesel, Prudhoe Bay may be looking at \$5/gallon fuel costs. Couple this diesel price with an ample supply of stranded gas, and sufficient motivation for LNG development exists.

LNG can be substituted for diesel fuel in many applications. Since the economic driver is the price differential, the larger the user of fuel, the greater the benefit from converting that user to LNG.

LNG works well in locomotives, drilling rigs, mining trucks, power generation, heavy trucks and off pipeline distribution. Today, LNG is being used in all of these applications.

Spectrum Alaska, LLC is wholly owned by Spectrum LNG, LLC. Its purpose is to construct own and operate an LNG plant on the North Slope. This plant will provide LNG for use in any market that chooses to convert. Drilling rigs, mines, trucks, power plants, small gas distribution systems, are all potential users. Virtually anything that uses diesel can be converted to use LNG. Further, LNG can be easily converted to CNG which is becoming a very popular motor fuel for smaller vehicles.

Spectrum LNG, LLC also owns and operates another LNG plant located on the Arizona California border called Desert Gas, LP. This plant supplies about 50,000 gallons per day of LNG to the Los Angeles and Phoenix markets, mostly trucks and busses.

Spectrum's management developed another LNG plant in Alaska that they sold as part of the sale of Fairbanks Natural Gas, Co. This is an example of an "off pipeline distribution" project.

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Spectrum is led by industry veteran Ray Latchem, a self-proclaimed member of the group formally known as the “lunatic fringe” of the natural gas industry. LNG is now becoming very, very cool. Ray also led the development of two of Alaska’s natural gas distribution companies, Norgasco and FNG, and is still the largest shareholder in Norgasco.

After providing the brawn to build Colville, Inc. into the leading diesel distributor on the North Slope, Jeff Helmericks sold his interest to his partner. Jeff presided over and actually delivered much of the 20 million gallons per year they sold. After selling his interest in Colville, Jeff joined the effort to construct the Desert Gas plant in Arizona. Subsequent to that effort, he purchased an interest in Spectrum LNG and took on the role of Vice President of Engineering and Operations.

Mark Ploen began his career in the oil pollution cleanup industry on the North Slope and just offshore, monitoring the storage and handling of diesel fuel at remote drilling sites and providing clean up services to those that needed it. Mark built his consulting and equipment sales company, Qualitech Environmental, into an international response organization. He has held key roles in oil spill responses beginning with the Tanker Glacier Bay spill in the Cook Inlet in 1987 through BP’s Macondo MC252 spill in the Gulf of Mexico in 2010.

The three partners share a background in building successful businesses that deal with the delivery of gas and liquid fuels. They have also been involved with the developments at Prudhoe Bay since the 1970’s. Together, they make an excellent team to lead the North Slope’s conversion from diesel to LNG.

The company has a very versatile and capable staff that built and operates the Arizona plant. This team will be expanded as needed to support the development and operation of the Alaska plant. In addition the company employs several outside technical consultants that have all worked together with the company’s management in the past. Each consultant specializes in a particular aspect of the design, construction, and operation of the project.

A site within the Prudhoe Bay Unit, just south of Flow Station #3 has been selected for the LNG plant. The State of Alaska owns the land and Spectrum has filed a lease application with the State Pipeline Coordinator’s Office, a division of the Department of Natural Resources. Spectrum has also filed an application with the Regulatory Commission of Alaska for a Common Carrier Certificate for its short gas supply pipeline.

Numerous other permits are needed and are being or will be applied for in a timely manner.

Plant site selection was based on several criteria. Proximity to market and gas supply, and safe distances from neighbors are some of the key considerations.



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The site is within 1,100 feet of a large gas supply. It is 1,550 feet away from the closest structure and it is a normally unmanned flare manifold building. Natural boundaries of roads, lakes, power lines, and pipelines will likely preclude additional development in the immediate area.

While there is an ample supply of gas at Prudhoe Bay, it is of a very poor quality. Most gas sales agreements contain the phrase “as produced” in the Gas Quality section of the agreement. It does not meet the quality standards for any gas transmission pipeline system. While it does burn well, it will not liquefy well. A significant investment in gas treating upstream of the LNG process is required. The Spectrum plant will employ CO₂, H₂S, NGL, and water removal processes upstream of the LNG production process. This adds to both the CAPEX and OPEX of the project.

The plant will be built in phases. The first phase will include:

1. A tie in connection, pipeline, and metering facility that can deliver the gas needed to produce up to 400,000 gallons per day of LNG.
2. The front end treatment equipment for a 400,000 gallon per day plant.
3. A single LNG storage tank and truck loading bay.
4. A single LNG “train” that can liquefy up to 100,000 gallons per day.
5. Space for more tanks, truck loading bays, and 3 more LNG trains on a 15 acre site.
6. A maintenance shop.
7. Office and man camp building.

The estimated cost for the first phase is \$30 million. The schedule is to lay gravel in the summer of 2013 and construct phase one of the plant in either the Fall of 2013 or the Spring/Summer of 2014. Aside from the field erected camp, shop, and control room, the majority of the processing equipment will be pre-assembled in truckable modules. Some of the processing equipment has already been purchased. The build out schedule will be market driven, as demand increases, additions will be made to the plant to accommodate the demand.

Attached are three drawings showing the plant site, conceptual facility layout for the first phase of development and a layout for the built out plant.

