Spectrum Alaska's Prudhoe Bay LNG Plant Development

Presented to

AIDEA

November 19th, 2013

SPECTRUM LNG, LLC

What is Required for the Successful Development of an LNG Plant in Prudhoe Bay? (Experience)

Today's subject is the development of an LNG Plant at Prudhoe Bay. We'd like to start with what we think is needed for a successful LNG development.

- **Sound Development plan.**
  - **Experienced Development Team.**
  - **Suitable Plant Site.**
  - **Optimized Plant Design.**
- **Execution Team.**
- **Commercial Operations/Market Expansion Team.**
- **Example; VPS**

Introduction (Experience)

Thanks for the opportunity to present this project.

We have been contemplating this project since 2006 and developing it since 2011.

I'd like to start by introducing some of our team members.

- Jeff Helmericks
- Shannon Latchem
- Mark Ploen
- Keith Hand
- Brian Durrell
- Jeff Lowenfels
- Bret Bartholomy
- Rick Cathriner
- Suzanne Kennedy
- Charlie Helm
- Engineering support - Quanta, SME
- Contractors – Conam
- Many Others

History (Experience)

Spectrum's principals have a very long history of developing AND operating both natural gas and liquid fuel businesses on the North Slope.

- Conceived and founded Norgasco in 1985 – 28 years of safe delivery of natural gas to Prudhoe Bay/Deadhorse. Over 22 bcf to date.
- Conceived and founded Colville, Inc. in 1986, built into the largest diesel distributor in Prudhoe Bay.
- Conceived and developed Northern Eclipse, designed and built the Pt. McKenzie LNG plant beginning in 1993.
- Developed Fairbanks Natural Gas in 1996, obtained CPCN from APUC, delivered first gas to Fairbanks in 1997.
- Founded Spectrum Energy Services, LLC in 2000 to pursue LNG projects. Holds patent for import terminal design.
- Designed, own and operate the Ehrenberg AZ LNG Plant.

More History (Experience)

- Norgasco Development—Gas Distribution
  - Gas supply contract with ARCO, first ever arm's length Prudhoe Bay gas sale. 40 pages took 9 months, then Sohio/BP contract, 9 pages and two weeks, then later with EXXON on just a one page letter agreement. Also purchased gas from Conoco, Amerada Hess, Phillips Petroleum over the years.
  - Battle with NANA. Nana wanted the gas utility and opposed us at the APUC level, with ARCO/BP, and in the market place. We persevered.
  - CPCN from the APUC, took years. Lower profile version of the GCI/Alascom battle. Sponsored legislation to reform the APUC process. Finally prevailed at the APUC.
  - This project has delivered over 22.5 Billion cubic feet of gas.

Northern Eclipse, LLC (Experience)

- Development of Northern Eclipse
  - With Prudhoe Bay piped for gas, we started Northern Eclipse in 1992 with an eye toward other gas developments in AK.
  - Focused on Fairbanks. Had to have LNG to make it happen. Began seriously studying LNG Plant design 21 years ago. Now a recognized industry expert.
  - Started developing plans for small scale LNG plant at Pt. McKenzie.
  - In 1994 we purchased a former hay farm that has the 20 " Beluga River pipeline through its southern border. Site construction began in 1995.

Engineering/Innovation (Experience)

- We purchased unused surplus gas processing equipment in Texas and re-designed it to produce LNG. Most of this design work was performed in house. 90% of the work was performed by the small Northern Eclipse crew. The welder is now the plant manager for FNG, the current owner.
- Concurrently developed FNG.
  - CPCN, second time around got easier.
  - Lots of ROW issues in Fairbanks. All handled in house.
  - LNG Satellite development, required waiver from US DOT, went to Washington DC to get it, and succeeded.
  - Lots of construction, pipe installation.

Pt.McKenzie, AK LNG Plant (Experience)

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We did it (Experience)

- First load of LNG delivered to Fairbanks in 1997
- Began connecting customers and converting houses and commercial facilities.
- Economically disappointing. Couldn't penetrate market fast enough due to low fuel oil price at the time. Had to sell our interest to better capitalized partner.
- It was an interesting project and eventually the price of oil rose to the point that gas prices could increase to support a profitable operation.
- Initial price was regulated below $8/MMBtu. Current FNG owners are unregulated at $23/MMBtu and not significantly expanding the customer base.
- We are no longer affiliated with FNG or Northern Eclipse, LLC.

Spectrum LNG Development (Experience)

- Purchased the remnants of the Rosenberg LNG Plant out of the ENRON estate in 2006.
- Planned to install in Prudhoe Bay.
- Changed to Ehrenberg, AZ when Clean Energy signed take or pay (TOP) agreement in 2007.
- Located excellent site for plant on the AZ/CA border. Leased the land.
- Redesigned the plant to make 50,000 gpd, permitted, re-built and installed the plant.
- Producing the lowest priced LNG in the US, making close to 55,000 gpd average.
- Recently agreed with Clean Energy to expand TOP capacity to 65,000 gpd. Expansion completion in the first Quarter of next year to increase plant size.
- We are developing a second site in Arizona and another site in Oklahoma.

Spectrum- Ehrenberg, Arizona (Experience)

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Spectrum- Ehrenberg, Arizona (Experience)

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Spectrum- Ehrenberg, Arizona (Experience)

Looking North over Spectrum's LNG Plant in Arizona

View to the South

This is what we do every day, load trucks (Experience)

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This is what we do, ship LNG (Experience)

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Our customers rely on us (Experience)

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Summary of our Experience (Experience)

- Developed two of the five “Merchant LNG” Plants in the Western U. S.
- Developed two of the four Natural gas distribution companies in Alaska.
- Developed two liquid fuel distributorships in Alaska.
- We have had the privilege of leading multiple successful gas distribution projects in AK and elsewhere.
- Including other non-Alaskan Ventures, we have developed 7 Enterprises that continue in profitable operation today.

What's next after Experience? (Best Plant Site)

- **A Suitable Plant Site is required.**
  - Spectrum selected its site and was flattered to later discover that the CB&I team had selected the same site. CB&I is a respected group and they came to the same conclusion for the best site.
  - Spectrum made a considerable investment to acquire the site and begin the development of the plant, based on our confidence in our plan.
  - Many permits are required. AIDEA staff has researched our permitting progress and it is further along than any of the others.
    - The remaining significant permit is in the works and will be issued in a timely manner. Yesterday we had a conference with ADEQ over details of the air emission permit application we are about to file.
    - We did not need to hire any help to identify the permits we require. We knew based on our experience developing other projects in the area what would be expected.
    - We have never been denied any permit we pursued.

Spectrum and AIDEA Plant Sites (Excellent Neighborhood)

Plant Site taken 12-2-12 (Best Plant Site)

Needs to be Close to Gas Supply (Best Plant Site)

- A Convenient gas supply is required.
  - Our site is 1,100 feet from Prudhoe Bay's largest fuel gas pipeline. Closer than the AIDEA Pad "B" and over 3 miles ($10MM) closer than the FNG/Polar pad in the middle of Deadhorse.
  - Our connection point will not even require an expensive Hot tap procedure.
  - The feed gas pipeline requires a ROW. This requires a CPCN from the RCA. We applied in 2012 and received this in a timely manner. We hold a Certificate of Public Convenience and Necessity to operate as a Common Carrier Pipeline.
  - We have entered into a gas supply agreement with Norgasco. This will allow us to take delivery of gas to use as fuel during the construction period and the startup and testing of the plant. Should we need to provide the process gas for liquefaction, we will likely secure a more economic supply. But we have secured the gas needed for construction and testing.

Pipeline Tie In Point No Hot Tap Required, Conam Installed this Tap

1,100 feet from Tie in to Plant (Convenient)

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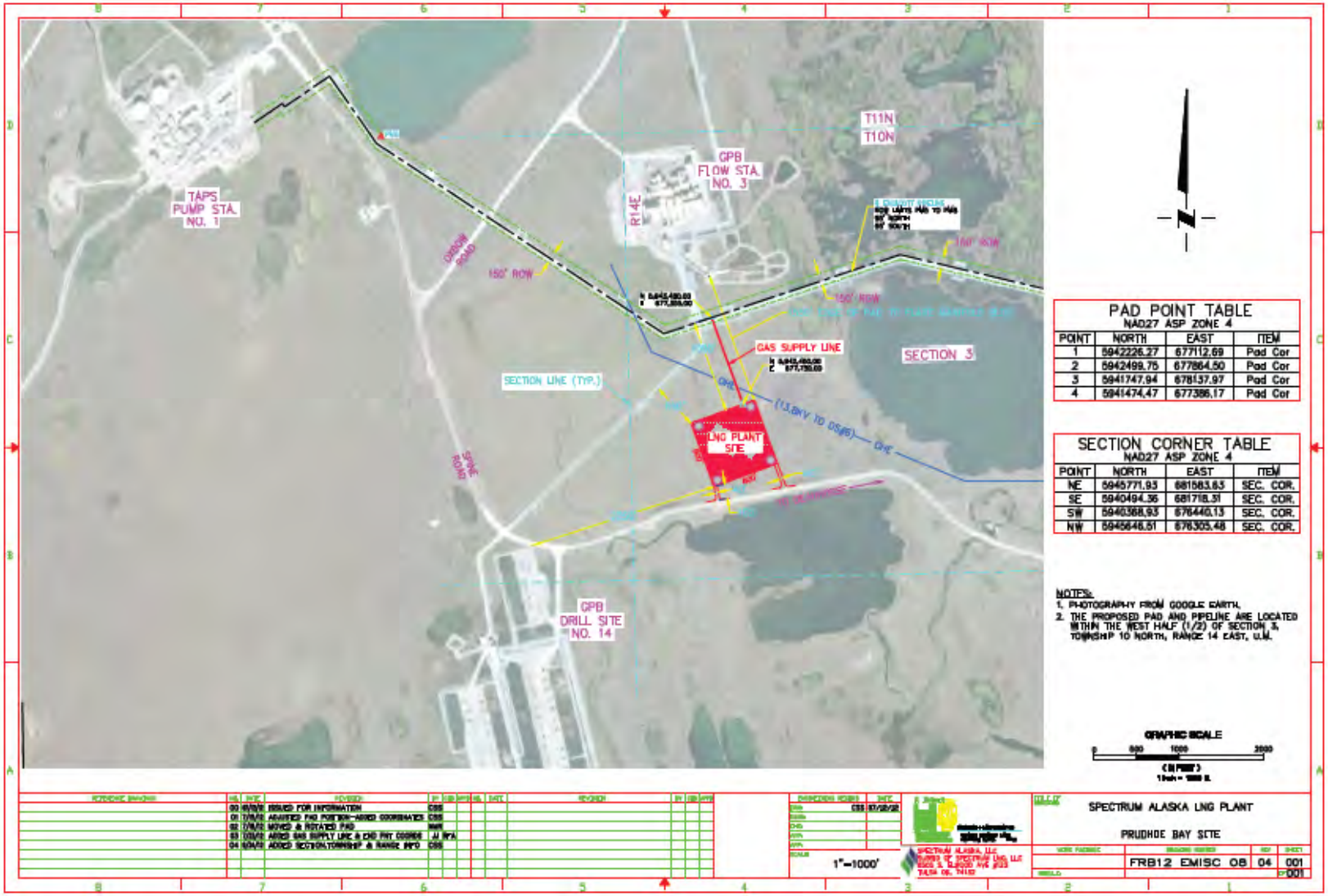
Best Site



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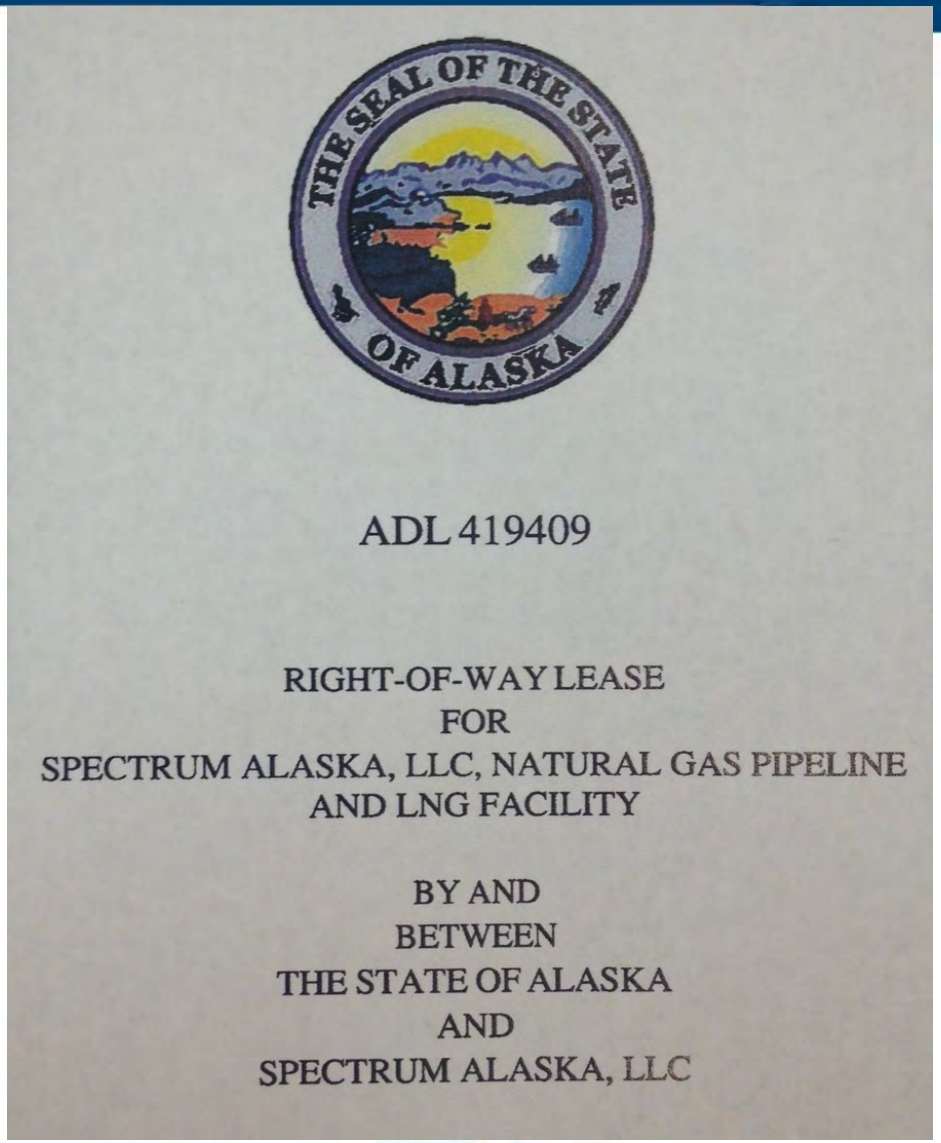
30 Year Lease with DNR (Best Plant Site)



ADL 419409

RIGHT-OF-WAY LEASE
FOR
SPECTRUM ALASKA, LLC, NATURAL GAS PIPELINE
AND LNG FACILITY

BY AND
BETWEEN
THE STATE OF ALASKA
AND
SPECTRUM ALASKA, LLC

RCA Certificate of Public Convenience and Necessity for Common Carrier Pipeline Issued (Best Plant Site)

STATE OF ALASKA

THE REGULATORY COMMISSION OF ALASKA

Before Commissioners: T.W. Patch, Chairman
Paul F. Lisankie
Robert M. Pickett
Norman Rokeberg
Janis W. Wilson

In the Matter of the Application Filed by Spectrum Alaska, LLC for a Certificate of Public Convenience and Necessity

P-12-018

ORDER NO. 5

ORDER APPROVING APPLICATION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY, SUBJECT TO CONDITIONS; GRANTING CONSTRUCTION PERMIT; AND REQUIRING FILINGS

BY THE COMMISSION:

Summary

We grant Spectrum Alaska, LLC (Spectrum) a certificate of public convenience and necessity (certificate), subject to conditions. We grant Spectrum a construction permit. We require filings.

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BP's Letter of Non-Objection (Best Plant Site)

bp

Jeff Spatz
Head of Finance, AK Operations

BP Exploration (Alaska) Inc.
900 E. Benson Boulevard
Anchorage, Alaska 99508

Tel: (907) 564 4773
Email: jeffrey.spatz@bp.com

March 4, 2013

Mr. Raymond Latchem
President
Spectrum LNG, LLC
8505 S. Elwood Ave Bldg 123
Tulsa, OK 74132

Re: Spectrum LNG, LLC
Letter of Non-Objection from Prudhoe Bay Unit for Construction and Operation of an LNG Plant and Feed Gas Pipeline

Dear Mr. Latchem:

Road Use Agreement (Best Plant Site)

Prudhoe Bay Unit Road Use Agreement

Agreement No. 2013-07

This agreement for non-exclusive access to and use of the road system at the Prudhoe Bay Unit ("PBU") is made between BP Exploration (Alaska), Inc. ("BPXA"), as operator of the PBU ("PBU Operator"), and Spectrum Alaska, LLC ("Spectrum").

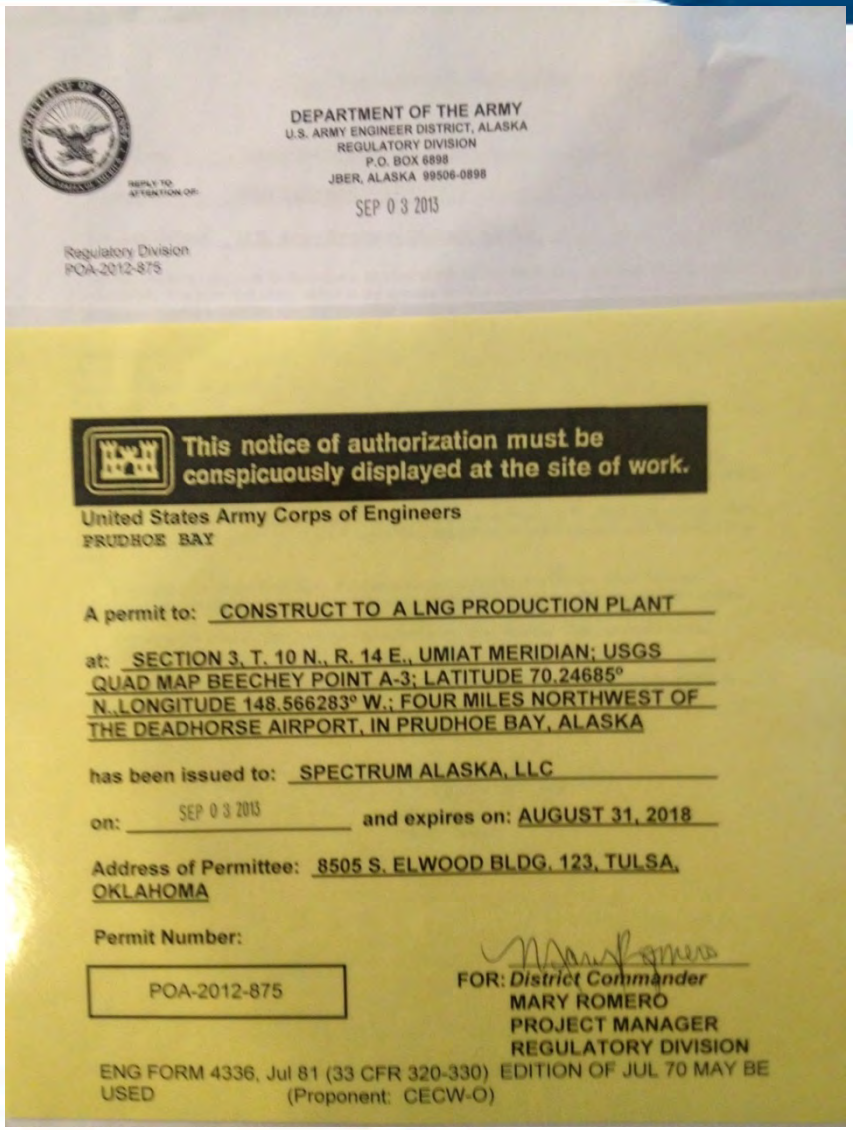
RECITALS

A. The PBU Working Interest Owners have constructed and maintain the PBU Road System in support of Unit Operations. The PBU Road System, constructed by private parties for industrial traffic in a remote area, has none of the services or conveniences generally associated with major roads.

B. Spectrum has requested access to and use of the PBU Road System for LNG Development Operations.

C. The PBU Working Interest Owners have approved limited third-party non-exclusive use of the PBU Road System, subject to compliance with certain terms and conditions to protect PBU facilities and to avoid interference with PBU operations.

Corp of Engineers Gravel Permit (Best Plant Site)



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
P.O. BOX 6898
JBER, ALASKA 99506-0898

REPLY TO ATTENTION OF:

SEP 0 3 2013

Regulatory Division
POA-2012-875

This notice of authorization must be conspicuously displayed at the site of work.

United States Army Corps of Engineers
PRUDHOE BAY

A permit to: CONSTRUCT TO A LNG PRODUCTION PLANT

at: SECTION 3, T. 10 N., R. 14 E., UMIAT MERIDIAN; USGS QUAD MAP BEECHEY POINT A-3; LATITUDE 70.24685° N.,LONGITUDE 148.566283° W.; FOUR MILES NORTHWEST OF THE DEADHORSE AIRPORT, IN PRUDHOE BAY, ALASKA

has been issued to: SPECTRUM ALASKA, LLC

on: SEP 0 3 2013 and expires on: AUGUST 31, 2018

Address of Permittee: 8505 S. ELWOOD BLDG. 123, TULSA, OKLAHOMA

Permit Number:

POA-2012-875

FOR: *District Commander*
MARY ROMERO
PROJECT MANAGER
REGULATORY DIVISION

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED (Proponent: CECW-O)

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Next on the List; Optimized Plant Design

- **An Optimized Design is required.** Spectrum has engineered, developed, and operated two small scale LNG plants. We have ample North Slope experience. We are very well suited to design and operate the plant
  - **Reliability** in harsh climates. The Spectrum team has hands on experience in operating on the North Slope. We know what works and what may not.
  - **Operability.** Again, based on our experience we know what is likely to be problematic and what's not. All of our principals have actual hands on operated the plants and delivered the product. From rotating equipment, compression, heat exchangers, to trucking, we have done it all. Experience counts, especially in remote harsh climates.
  - **Efficiency** is important to us. Under our original business model it directly impacted our profit and competitive edge. Since we agreed to use the RCA rate regulated utility business model, now the benefits of the more efficient process are passed on to the customers. We still pride ourselves on the efficient design.
  - **Simplicity** is important for both operational safety and reliability. By designing a plant that reduces the number of systems required, we make it simpler to operate and therefor safer for the plant operators. This also helps achieve another goal of reducing the CAPEX. A very significant difference between our design and one of the others under consideration is the use of direct mechanical drive versus electric drive.

Evaluated Various Processes

- Turbo Expander/Compander - GE and others
  - With and Without front end chilling
- Nitrogen Cycle – Cosmodyne and others
- Mixed Refrigerant (MR) – Salof and others (Now GE)
- Cascade - York and others
- Mixed Refrigerant is most efficient in terms of hp/gallon
- The Other Merchant Plants…

Boron – Nitrogen Cycle w/TBXs
Electric Drive Water Cooled

Topock, AZ – Gas Turbine drive Mixed Refrigerant Water Cooled

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Willis – Electric Drive Mixed Refrigerant

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Linde Brochure from AIDEA Website (Skangas)

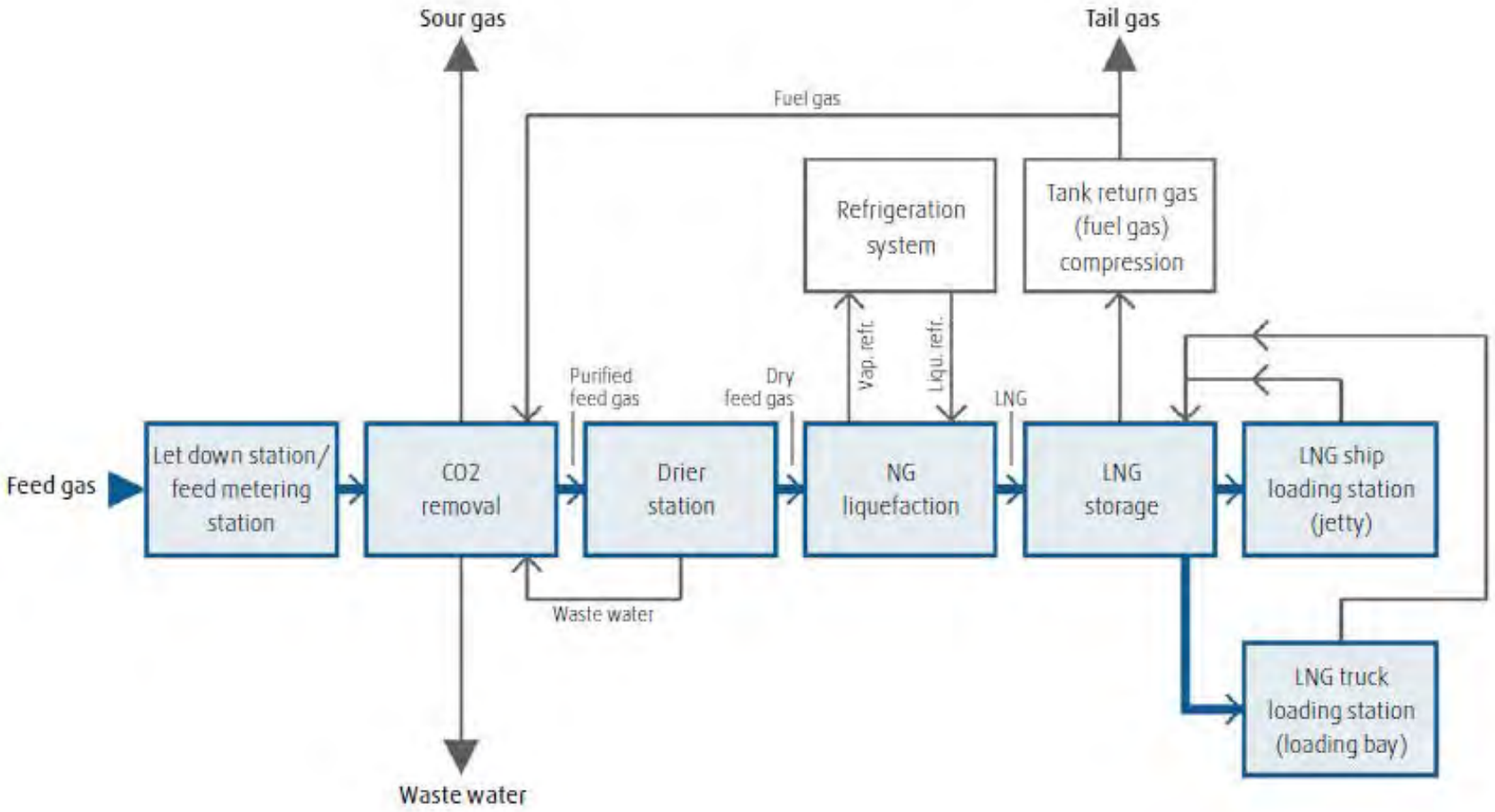

Fig1: Block diagram of the Stavanger LNG plant

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Process Selection (Optimized Plant Design)

- We modeled them all and decided to go with Mixed Refrigerant.
- Selected Prime Mover, Solar Centaur 50 Turbine (Caterpillar Company with proven record on North Slope)
- Allows for greater efficiency in cold weather conditions.
- Uses Direct Drive, mechanically most efficient.
- Minimizes moving parts, increases reliability.
- Can adjust refrigerant mix summer/winter=more efficient.

Spectrum LNG Plant Recap (Sound Development Plan)

- Site selected
  - DNR lease 100% complete
  - BP Non-Objection Issued
  - Road Use Agreement Executed
  - Pipeline Tie-In point selected, Agreement in Progress
- Permitting in progress
  - RCA Certificate of Public Convenience and Necessity Issued
  - Gravel permit Issued
  - Air Permit Application being prepared, will have by March 2015
- Design work progressing
  - Process selected
  - Train size selected
  - Detailed engineering in progress
- Expandable to meet all the needs of Alaska (18 Bcf per year)

Big Projects Need Big Help

- **An Executable Development Plan is Required.**
  - Sound project management starts with a well-documented plan.
  - Spectrum has already engaged QPS Engineering, LLC (QPS) for detailed design and project management services.
  - QPS has demonstrated they have the needed disciplines and depth of human resources (staff of 250) to produce the development plan and execute the project management with Spectrum oversight. They are part of a $6 Billion company and the largest pipeline construction firm in North America. We will discuss other potential Quanta involvement later.
  - A cohesive plan produces a workable schedule. Our schedule follows. We produce LNG in September of 2015 if not earlier.

Risk Reduction

- **Construction/Performance risk reduction by Spectrum.**
  - Spectrum reduces completion risks by using related engineering and construction companies. Better coordination during the detailed design, construction and startup phase of project.
  - Quanta Services, the parent to the engineering (QPS) and construction companies (Conam), to provide construction financing. They don't get paid until the plant passes it performance test.
  - AIDEA doesn't close its loan to Spectrum until the plant is operational.

Execution Team

- Spectrum LNG, LLC
- QPS Engineering, LLC
- CONAM Construction, Co.

CONAM

- Background: Bob Stinson started oil and gas career on lower 48 pipeline projects in 1973, worked as Construction Engineer on Section 1 of the Trans-Alaska Pipeline in 1975.
- In 1984 he was part of the team that founded Conam.
- Became president in 1993.
- Quanta bought Conam in 2009.

Conam History and Capabilities

- Conam has performed hundreds of oil and gas projects in Alaska ranging from $100K to $70MM.
- Most past projects have been “Facility” projects like this LNG Plant.
  - ConocoPhillips Alpine Drill Site Expansion – 1MM Manhours
  - BP Z-Pad Module Installation Project – 100K Manhours
  - BP Field Fuel Gas Pigging Project – 60K Manhours
  - BP GC-2 and GC-3 Produced Water Expansion Project – 550K Manhours
  - NSB Gas Field Drilling Program, EPC – 60K Manhours
  - ConocoPhillips Alpine CD-2 Module Installation Project – 200K Manhours
  - AFSC Anchorage Crosstown Jet Fuel Pipeline EPC
  - Other Projects in Anchorage, Pt. Hope, Kenai, Southeast AK

Conam History and Capabilities (cont'd)

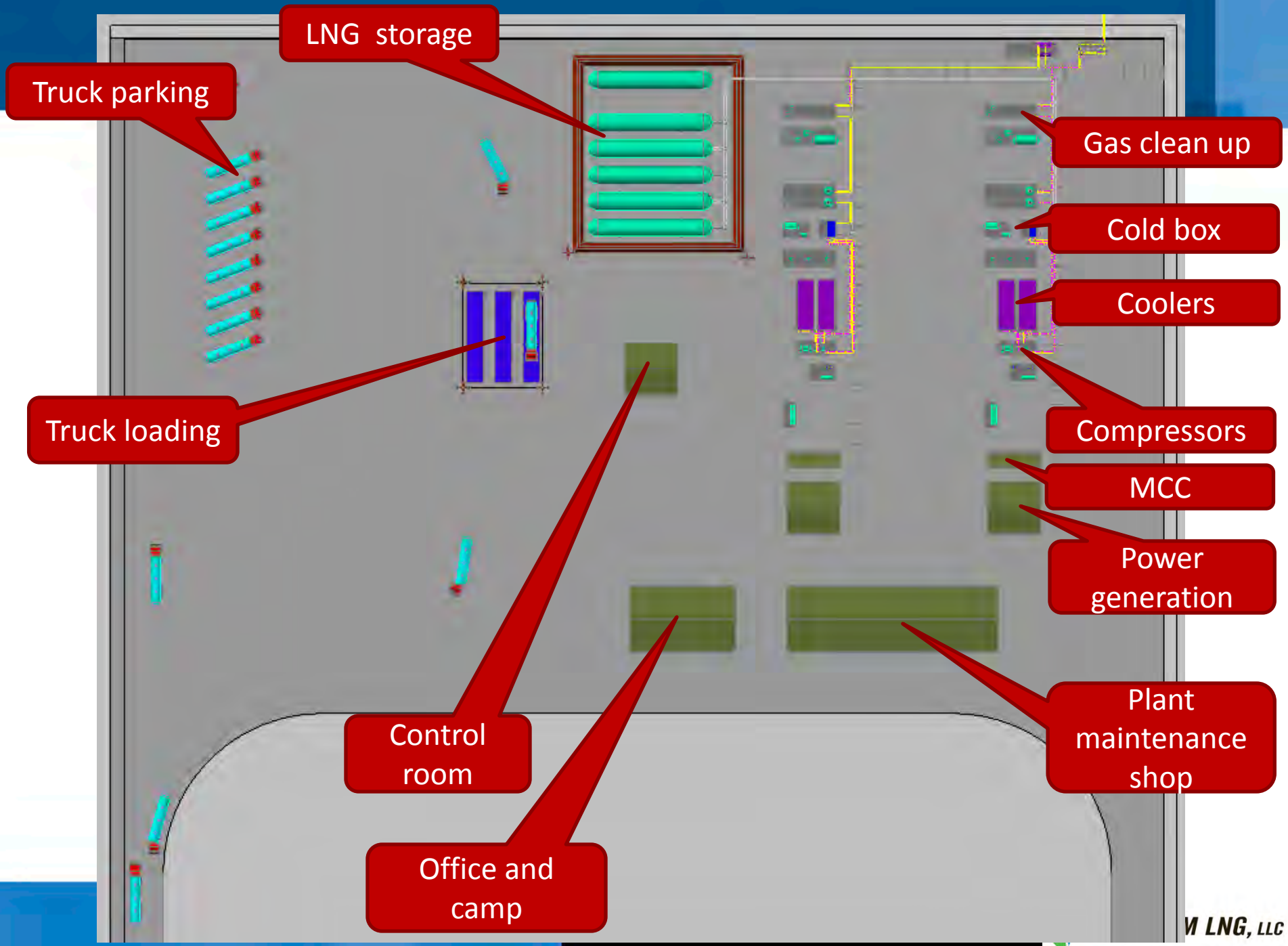
- Owns one of largest equipment fleets in Prudhoe with Deadhorse Facility
- Conam is dedicated to long term relationships with Alaska clients. Quanta as parent shares the same values. We target projects that fit our expertise, safety expectations, and our client's goals, whether large or small.
- Worked with Ray at Norgasco and Northern Eclipse where Conam helped build the small LNG plant at Pt. McKenzie. Not very much work but performed good service with expectation of potentially bigger projects. Now, 20 years later it is paying off. We have a very long term outlook for business in Alaska.

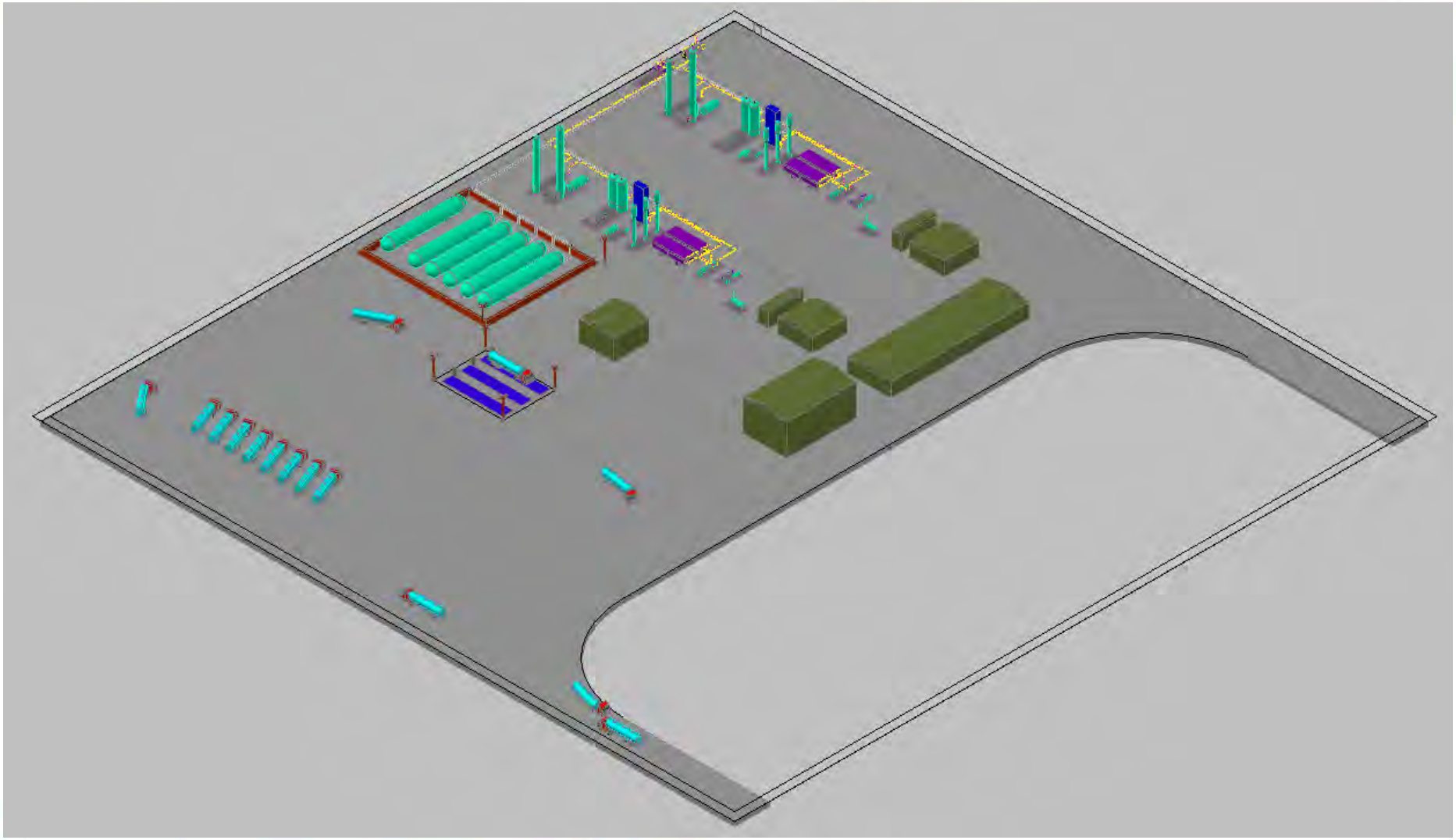
Quanta Services – Conam Parent Corporation

- Quanta, an S&P 500 company, (PWR on NYSE) purchased privately held Conam in 2009.
- Quanta is a leading energy infrastructure conglomerate with over 40 operating companies that specialize in the construction of the electrical power and natural gas industry projects in North America.
- Quanta's business model preserves their Op Unit management with "hands off" oversight. Op Units have latitude to continue with their own business models. Much like Warren Buffet's approach.
- CONAM has not changed since Quanta's purchase except now we have greater depth of resources and capital to grow.
- Conam can leverage sister companies' expertise in other areas, particularly Engineering and Procurement; i.e. QPSE, to provide EPC, turnkey projects.
- CONAM can leverage Quanta's capital to assist clients with construction financing. So EPC becomes EPCF, F for Finance. "We believe in our ability to deliver and don't mind putting our money behind our performance."

Spectrum North Slope LNG Plant Project

- Nice size. Fits in medium range for Conam Projects.
- Lots of experience with North Slope projects requiring multi-season, modular construction.
- The project schedule features logical sequence of activities; i.e. spring 2014 pipeline work, summer 2014 gravel work with shop and camp installation, clearing the way for 2015 spring/summer installation of LNG Process Facilities.
- In Conam's backyard, 5 miles from our base in Deadhorse. Very convenient.
- Project is needed to supply alternate fuel for our construction fleet which is cheaper and cleaner. Leads to less maintenance.


LNG storage
Truck parking
Gas clean up
Cold box
Coolers
Truck loading
Compressors
MCC
Power generation
Control room
Plant maintenance shop
Office and camp



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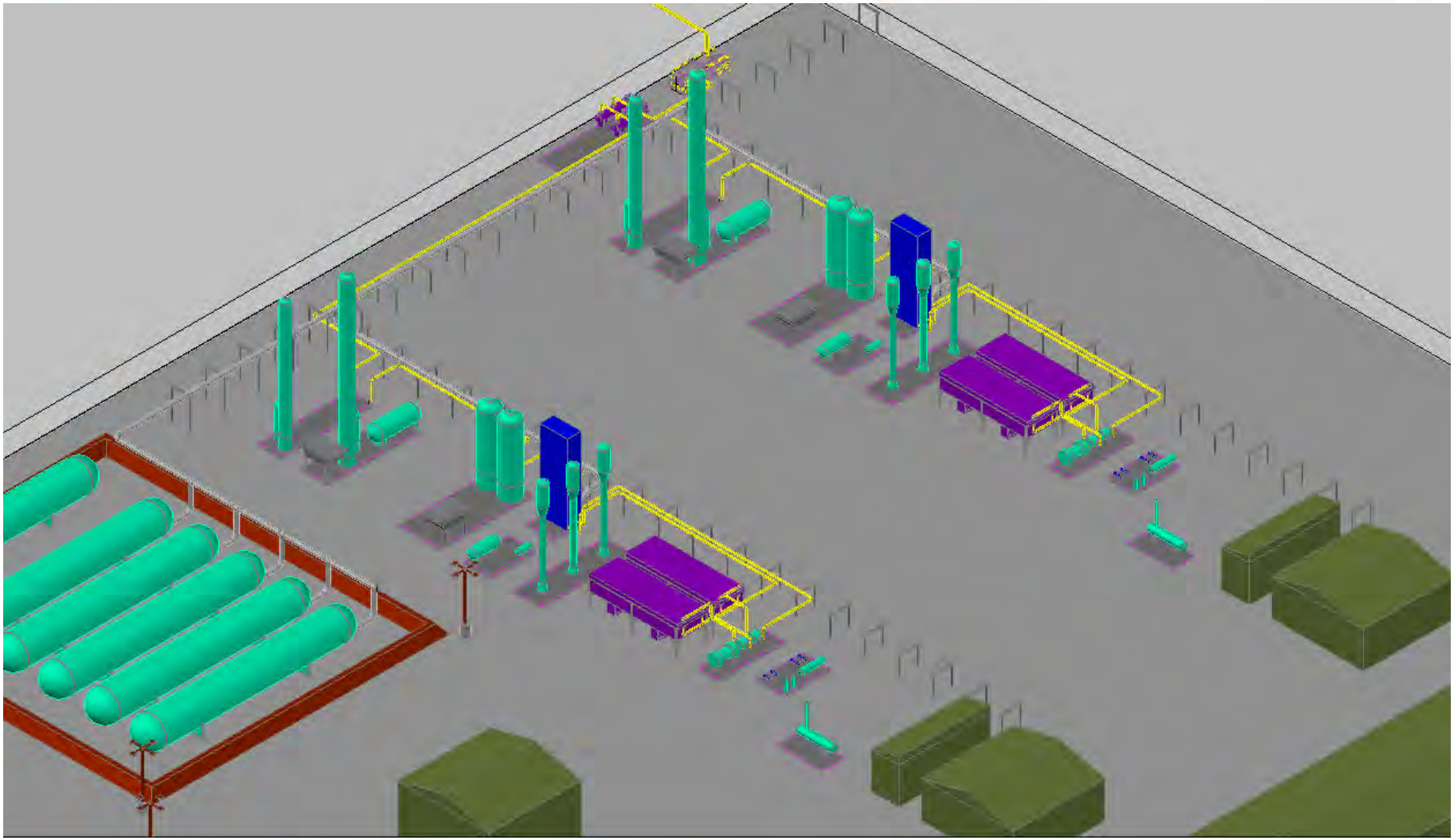
Multiple Trains

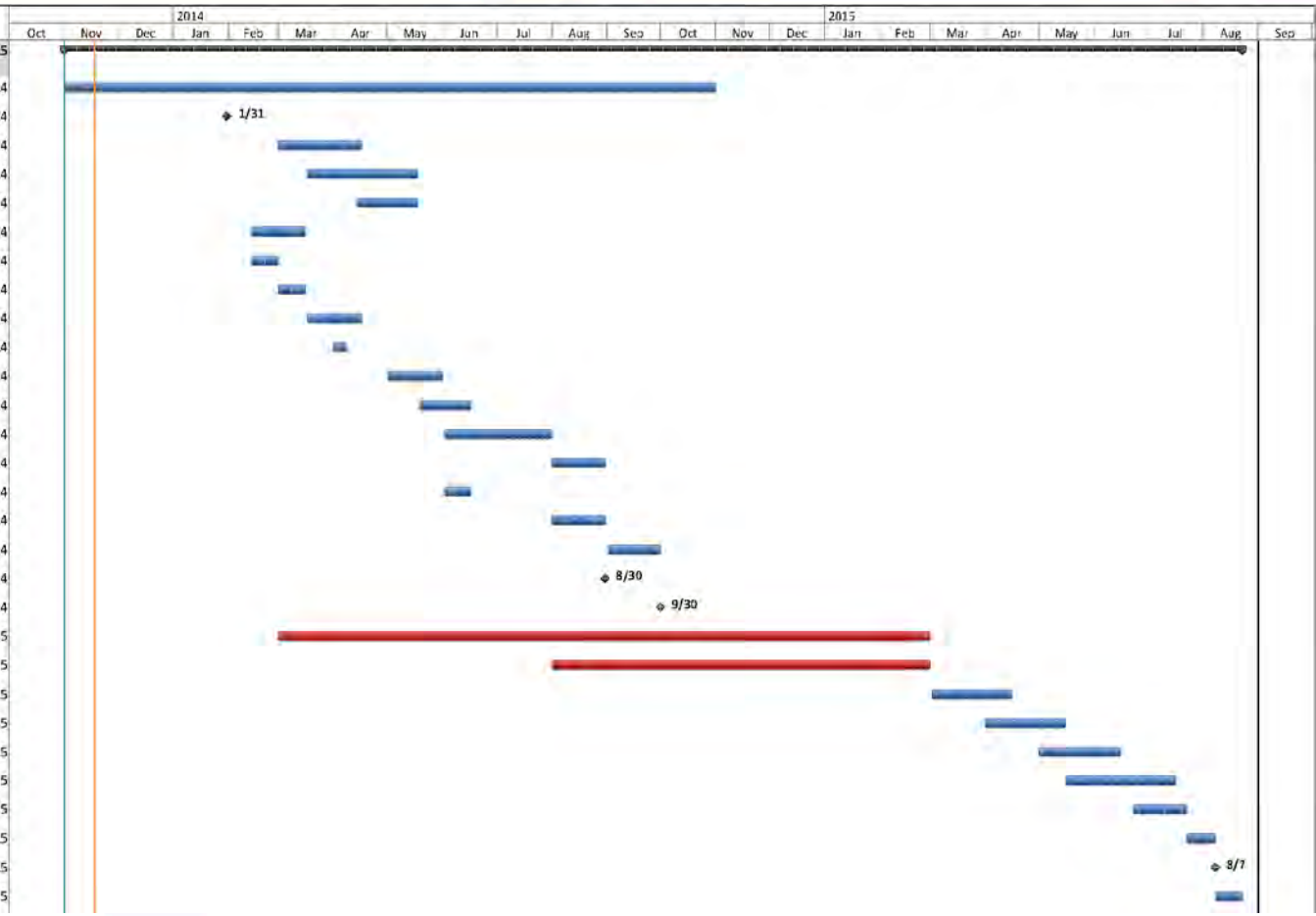


Spectrum North Slope Plant (cont.)

- Spectrum's project is well thought out from Project Management view. With Spectrum, Conam, QPSE, Quanta working as team through EPC Process. This is not typical North Slope client approach. Refreshing.
- Fuel gas instead of expensive diesel to be use for power generation and heating during construction will reduce project costs. Innovative for Prudhoe Bay. Very appropriate given the nature of the project.
- Partnering with Conam to maximize use of camp and shop through winter to reduce project costs.
- Spectrum has CNG powered trucks and promotes use of gas power in Prudhoe Bay. Even developing a CNG powered loader in Fairbanks.
- We will buy large truck tractors and CNG Pickups due to Spectrum vision of increased supply of LNG on North Slope and its added value to other areas of the State. Alaska is way behind L48 LNG market.

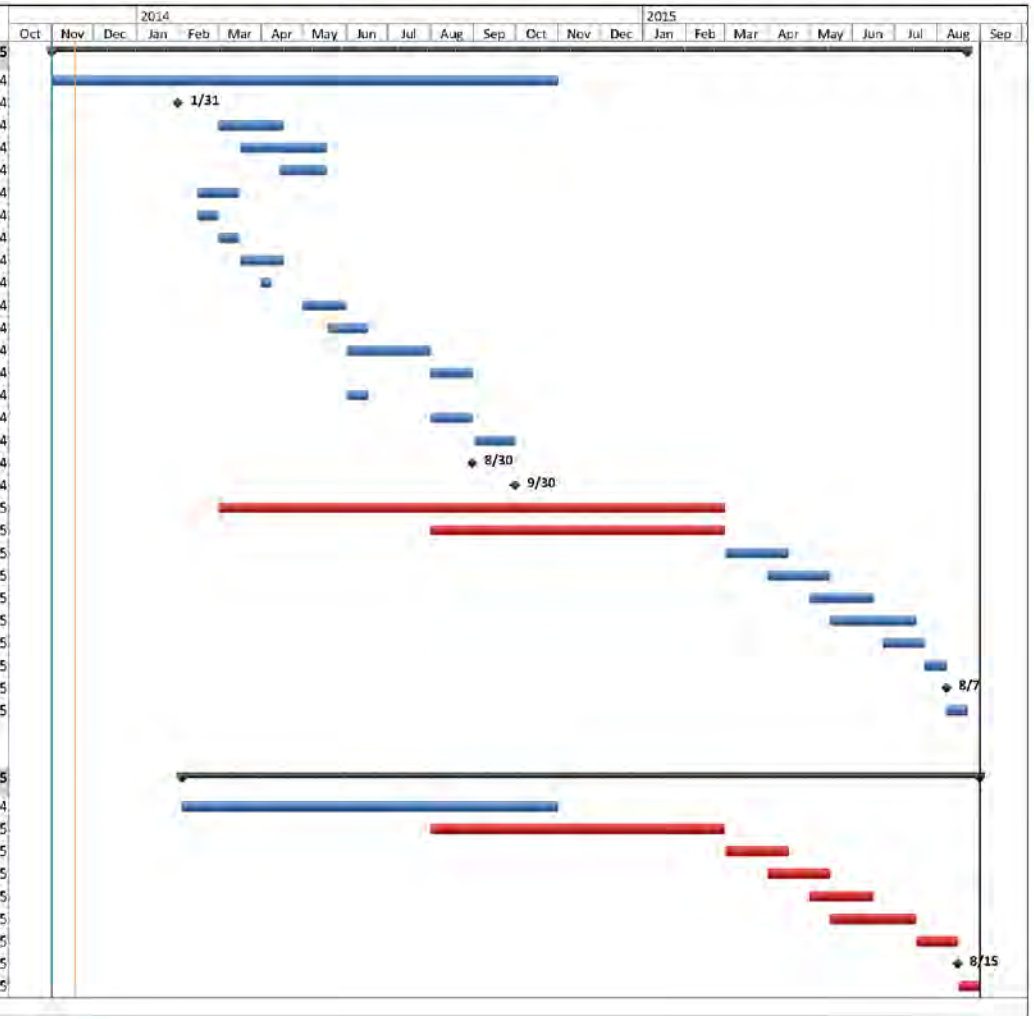
Schedule – Prudhoe Bay LNG Plant

Task Name	Duration	Start	Finish
Prudhoe Bay LNG Plant	**471 days**	**11/1/13**	**8/22/15**
Engineering Design	253 days	11/1/13	10/31/14
Modular Camp & Shop Contract to Build	0 days	1/31/14	1/31/14
Off Site Build of Man Camp	39 days	3/1/14	4/16/14
Off Site Build of Shop	53 days	3/17/14	5/17/14
Freight Haul of Man Camp	30 days	4/14/14	5/17/14
Survey & Ice Road	26 days	2/14/14	3/15/14
VSM Fabrication	13 days	2/14/14	2/28/14
VSM Drill, Camp & Building Piers	13 days	3/1/14	3/15/14
VSM & Pipeline Lay	26 days	3/17/14	4/16/14
Install Pad Construction Fabric	6 days	4/1/14	4/7/14
Site Civil Gravel	26 days	5/1/14	5/31/14
Freight Haul of Shop	24 days	5/19/14	6/16/14
Install Camp	50 days	6/2/14	7/31/14
Mechanical & Electrical Tie-in of Camp	26 days	8/1/14	8/30/14
Shop Civil	13 days	6/2/14	6/16/14
Erection of Shop	26 days	8/1/14	8/30/14
Mechanical & Electrical of Shop	25 days	9/2/14	9/30/14
Camp Occupancy Permit	0 days	8/30/14	8/30/14
Shop Occupancy Permit	0 days	9/30/14	9/30/14
Major Equipment Fabrication	301 days	3/1/14	2/28/15
Modular Skid Fabrication	174 days	8/1/14	2/28/15
FAT of Modular Skids & EQ	39 days	3/2/15	4/15/15
Freight Haul of Major Equipment & Modular Skids	39 days	4/1/15	5/15/15
Civil for Major Equipment	39 days	5/1/15	6/15/15
Install Major Equipment & Modular Skids	53 days	5/15/15	7/16/15
Loop Checks & Pre-Commissioning Steps	26 days	6/23/15	7/22/15
Start-Up	14 days	7/23/15	8/7/15
First Fill	0 days	8/7/15	8/7/15
Finish Out Road / Final Site Grade / Gravel	13 days	8/8/15	8/22/15



Schedule – Prudhoe and Fairbanks

ID	Task Name	Duration	Start	Finish
1	**Prudhoe Bay LNG Plant**	**471 days**	**11/1/13**	**8/22/15**
2	Engineering Design	253 days	11/1/13	10/31/14
3	Modular Camp & Shop Contract to Build	0 days	1/31/14	1/31/14
4	Off Site Build of Man Camp	39 days	3/1/14	4/16/14
5	Off Site Build of Shop	53 days	3/17/14	5/17/14
6	Freight Haul of Man Camp	30 days	4/14/14	5/17/14
7	Survey & Ice Road	26 days	2/14/14	3/15/14
8	VSM Fabrication	13 days	2/14/14	2/28/14
9	VSM Drill, Camp & Building Piers	13 days	3/1/14	3/15/14
10	VSM & Pipeline Lay	26 days	3/17/14	4/16/14
11	Install Pad Construction Fabric	6 days	4/1/14	4/7/14
12	Site Civil Gravel	26 days	5/1/14	5/31/14
13	Freight Haul of Shop	24 days	5/19/14	6/16/14
14	Install Camp	50 days	6/2/14	7/31/14
15	Mechanical & Electrical Tie-in of Camp	26 days	8/1/14	8/30/14
16	Shop Civil	13 days	6/2/14	6/16/14
17	Erection of Shop	26 days	8/1/14	8/30/14
18	Mechanical & Electrical of Shop	25 days	9/2/14	9/30/14
19	Camp Occupancy Permit	0 days	8/30/14	8/30/14
20	Shop Occupancy Permit	0 days	9/30/14	9/30/14
21	Major Equipment Fabrication	301 days	3/1/14	2/28/15
22	Modular Skid Fabrication	174 days	8/1/14	2/28/15
23	FAT of Modular Skids & EQ	39 days	3/2/15	4/15/15
24	Freight Haul of Major Equipment & Modular Skids	39 days	4/1/15	5/15/15
25	Civil for Major Equipment	39 days	5/1/15	6/15/15
26	Install Major Equipment & Modular Skids	53 days	5/16/15	7/16/15
27	Loop Checks & Pre-Commissioning Steps	26 days	6/23/15	7/22/15
28	Start-Up	14 days	7/23/15	8/7/15
29	First Fill	0 days	8/7/15	8/7/15
30	Finish Out Road / Final Site Grade / Gravel	13 days	8/8/15	8/22/15
31				
32				
33	**Fairbanks Satellite Plant**	**411 days**	**2/3/14**	**8/31/15**
34	Engineering Design	191 days	2/3/14	10/31/14
35	Major Equipment Fabrication	174 days	8/1/14	2/28/15
36	FAT of Modular Skids & EQ	39 days	3/2/15	4/15/15
37	Freight Haul of Major Equipment & modular Skids	39 days	4/1/15	5/15/15
38	Site Civil	39 days	5/1/15	6/15/15
39	Install Major Equipment & Modular Skids	53 days	5/16/15	7/16/15
40	Loop Checks & Pre Commissioning Steps	26 days	7/17/15	8/15/15
41	Start-Up	0 days	8/15/15	8/15/15
42	Finish out road / final site grade, gravel	13 days	8/17/15	8/31/15



Experience Counts

- Our CAPEX is lower not only because we have a superior design, but also because we know who to call to build it.
- Because we have built this same basic project before just on a smaller scale, we have concerns about the Fairbanks end of the project coming together.
- To address this concern, we have developed an option to go with our proposal.
- Virtual Pipeline Service. (VPS)

SB 23 Implementation

- The evolution of the negotiations with AIDEA.
- Spectrum has consistently said what is missing is the market, an offtake agreement is all that is needed. Very hard to get, lots of reasons.
- SB23 seems to have set the State to take the market risk. Best accomplished by making the AIDEA SETS loan subordinate to the Spectrum equity as outlined in our term sheet.
- Pricing is an issue. AIDEA insisted on transparency and cost based pricing. This is best accomplished using the RCA's utility based cost of service model and revenue requirement structure.
- Having certificated two economically regulated gas distribution utilities in the past, we are very familiar with this model and agreed to accept it. Structurally it can be implemented by adding the requirement to the covenants of the SETS funding.

Keith Hand - Background

- Life long Alaskan, was CPA at Deloitte, then CFO at FNG 1996-2002.
- At FNG, helped get the CPCN from the APUC.
- Moved on to be VP Business Management at VECO and CH2M Hill.
- Now supporting the development of Spectrum Alaska, LLC.

Spectrum LNG Capital Requirement (Commercial)

CAPITAL EXPENDITURES		
Infrastructure		9,162,000
Plant Components		111,447,000
Start Up Costs		9,308,000
Total CAPEX		129,918,000
AIDEA required Completion Reserve		10,000,000
GRAND TOTAL CAPEX		139,918,000

Spectrum LNG Capital Sources (Commercial)

	TOTAL	Funding Utilized	Funding Remaining
CAPITAL REQUIREMENT:			
Spectrum Capital Requirement	$129,918,000		
AIDEA Completion Reserve	$10,000,000		
TOTAL CAPTIAL REQUIREMENT	$139,918,000		
FUNDING SOURCES (USES):			
Spectrum Equity Contribution	$20,000,000	($20,000,000)	$0
SETS Financing	$125,000,000	($119,918,000)	$5,082,000
AIDEA Appropriations	$45,000,000		$45,000,000
TOTALS	$190,000,000	($139,918,000)	$50,082,000

Spectrum LNG Operating Expenses (Commercial)

North Slope LNG Plant Operating Expenses		
Onsite Labor (fully burdened):		
Onsite Plant Labor	$1,217,000	
Administration-on site	$190,000	
Supervision -on site	$394,000	
Total Onsite Labor		$1,801,000
Camp and Subsistence		$444,000
Transportation		$232,000
Plant Maintenance		$2,185,000
Pad lease payment		$70,000
Onsite Equipment		$50,000
TOTAL DIRECT OPEX		$4,782,000

Spectrum LNG Rate Setting Model (Commercial)

- Spectrum has adopted the RCA Rate Making Model
- Based on actual substantiated costs to achieve transparency
- Customer pricing set via a utility standard revenue requirement calculation. Based upon following factors:
  - Total operating expenses
  - Depreciation
  - Interest
  - Return on Equity adjusted for taxes
- Return to Spectrum based solely on Spectrum's equity contribution – not a "market value" or 'total cost plus' type of profit
- Results in low cost of liquefaction service delivered through to customers

Project Economics (Commercial)

- The RCA Rate model is typically an exclusive service area with no competition. In this case, Spectrum is not obtaining any market exclusivity but instead benefiting from the preferential SETS financing terms.
- Benefits of low cost SETS Funds are completely passed on to customers fulfilling the intent of SB 23.
- We are open to any pricing strategy that AIDEA prefers.
- AIDEA Staff has hired a rate case consultant to assist with the utility rate modeling.
- Recall, Spectrum is only charging for liquefaction services (tolling model).

Project Economics (Commercial)

- Virtual Storage no longer a factor as we are fully compliant with AIDEA requirement of a 9 Bcf multi train plant.
- Bottom line is that given our lower CAPEX and lower OPEX, we present the greatest opportunity to deliver the lowest liquefaction cost which translates to a lower delivered burner tip price for Interior residents.
- Volumes used are a big factor in price.
- Spectrum is being very creative in developing additional markets for LNG that will help produce the lowest price via increased volume.

Terms

- Review the term sheet highlights
  - Our site can easily host an 18 Bcf/yr plant.
  - We'll build a 9+Bcf/yr plant initially.
  - AIDEA can take over our site and leave us out of the development.
  - Or they can decide to make the SETS only funds available and Spectrum will build and operate the plant.
  - Our development plan is far ahead of others, and others might not produce LNG in 2015.
  - Spectrum will invest $20MM in equity. This will have senior priority to SETS funds.
  - In addition to Spectrum's 15% construction contingency, there is another $10MM in reserve funds. Total with contingencies and reserves is $140MM. Does not use all of the SETS funds and requires no grant funds. Hopefully the grant funds can be used to enhance conversions.
  - Contingencies are built in for cases of alternative gas supplies.

AIDEA and Spectrum can proceed without GVEA

- Spectrum's proposal does not require any single customer's participation.
  - Using the utility model and a 5 year stabilization period, we believe we can capture a lot of the market.
  - Even without GVEA, as long as there is a Satellite in Fairbanks connected to the FNG system, we can sell a lot of LNG.
  - GVEA will participate when it decides there is a viable plan that they have confidence in.
  - Also, either IGU or FNG should prevail at the RCA soon, we can add this volume.

Virtual Pipeline Service (VPS)

- Game changer.
- We prefer to participate in the Fairbanks Satellite to insure its timely development.
- Quanta Capital Services is willing to invest in the Fairbanks LNG Satellite and others across Alaska.
- Spectrum welcomes the larger market opportunity as insurance against slow market penetration in Fairbanks.
- Greatly leverages SB 23 by providing gas service to many more Alaskans.

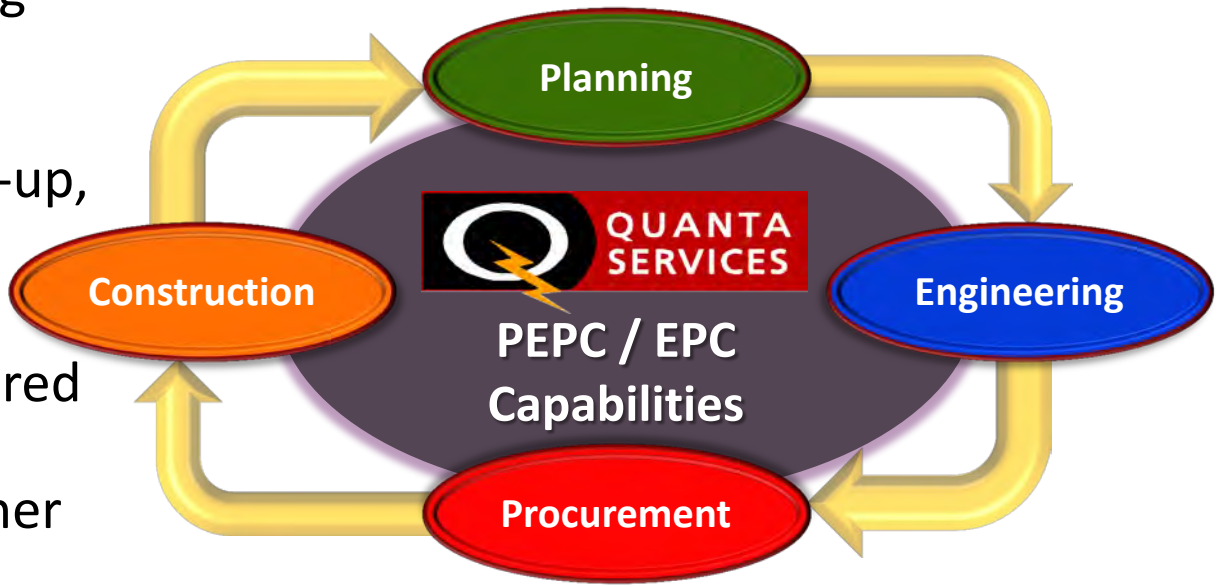
Quanta Services brings a lot to the party

- Is the leading specialty contractor providing comprehensive energy infrastructure solutions to the electric and gas utility and pipeline industries.
- Has scope and scale in its core businesses with deep customer relationships.
- Is the preferred employer in the industries it serves.
- Leads the industry in safety performance.
- Has a strong balance sheet and financial flexibility.
- Has an entrepreneurial business model and culture.
- $6.5 Billion in Revenues, $6 Billion market Cap

Integrated Services

Quanta is one of few specialized service providers capable of regularly delivering end-to-end solutions on a nationwide basis

- Planning, engineering and design through procurement and construction to start-up, operations and maintenance
- Service delivery tailored to unique customer requirements, whether single service or integrated turnkey approach

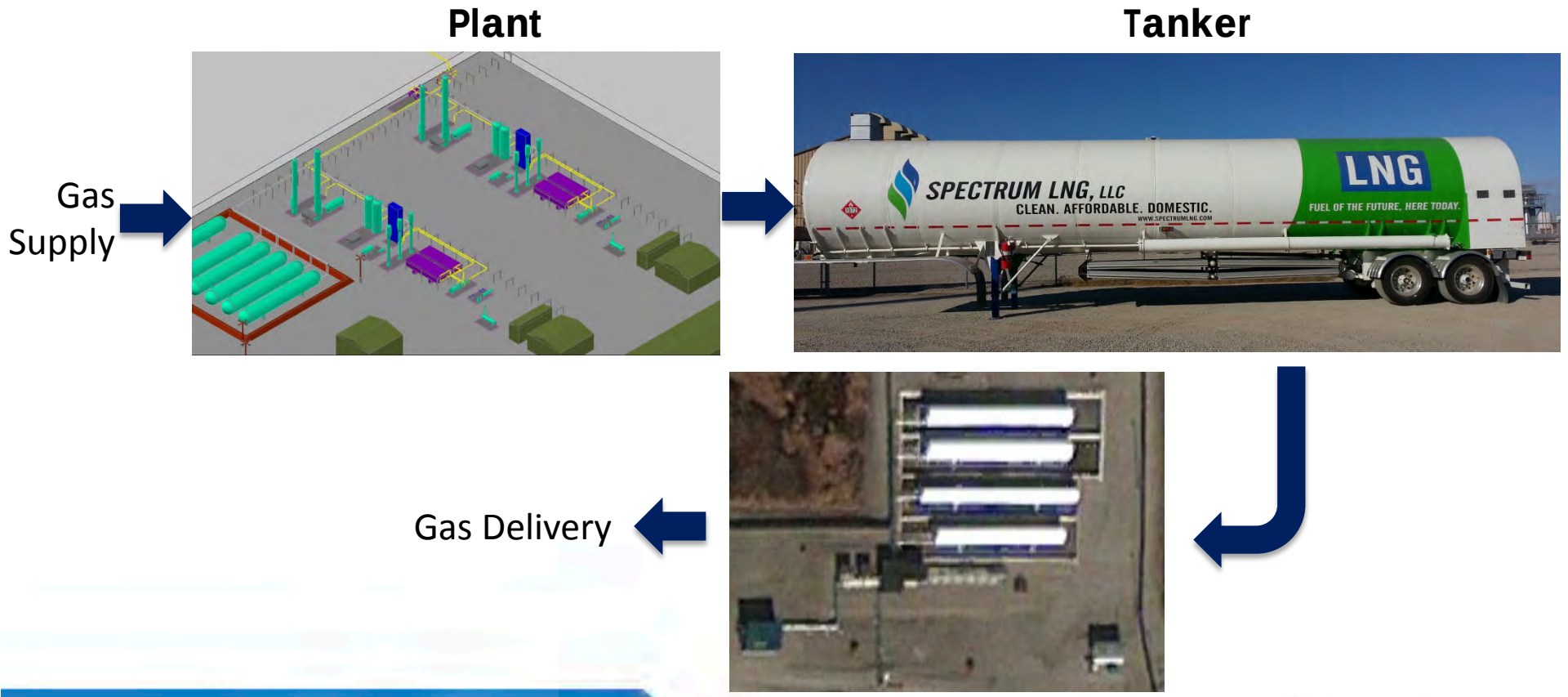


VPS provides significant enhancements to the IEP

- Focuses the responsibility of delivering gas on one entity.
- Ensures the schedule will be met.
- Provides gas service to many more Alaskans that just Fairbanks/North Pole.
- Increases efficiency of project by one team controlling all aspects of delivery.

What is VPS?

- Turnkey, curb to curb gas delivery service, just like a pipeline.



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How will it work?

- The Quanta Spectrum JV (QS) will develop the entire chain of delivery.
- Best analogy is a statewide LNG distribution utility.
- Each town will provide its own local sponsor for gas distribution and utilization.
- QS will provide all equipment needed to deliver gas to the community.
- Each community will provide a suitable location for the LNG Satellite. QS will offer technical assistance to locals on how to best use natural gas service in a safe manner.

Alaskans will benefit from:

- Initial construction efforts throughout many communities.
- Benefits spread more evenly throughout Alaska
- Continuing economic benefits from the use of cheaper fuel.
- Cleaner air.
- Less soil contamination from diesel storage.
- Increased oil exports from reduced in state consumption.

How does VPS fit in?

- Spectrum has been developing the Prudhoe Bay LNG plant since 2011.
- Currently Spectrum is on the AIDEA short list for funding the Prudhoe Bay LNG plant.
- The missing key ingredient is a commitment from the market to buy the product. No one wants to sign a take or pay agreement; all want the state to take the risk through SB23.
- VPS is offered only as an option to Spectrum's proposal to AIDEA to enhance the sales volumes, thus reducing the market risk.
- VPS happens to offer many more benefits.

Other harmonious benefits from VPS

- The IEP overall needs to maximize its throughput in order to minimize the cost of service to the customer. More customers = lower cost.
- Heating load peaks in the winter. Transportation fuel peaks in the summer. Complimentary loads.
- VPS makes both CNG and LNG available statewide for motor fuel.
- Alaska will be able to join the wave of Americans that are switching to natural gas as a motor fuel.

Natural gas used for motor fuel has many benefits of its own

- Cheaper
  - Direct impact to consumers.

- Cleaner
  - Substantially reduced pollution helps reduce non-attainment issues.

Economic stimulus from the conversions and new vehicle sales.

Which communities get gas?

More gas served to others also means more project certainty, more economies of scale = cheaper gas for everyone.

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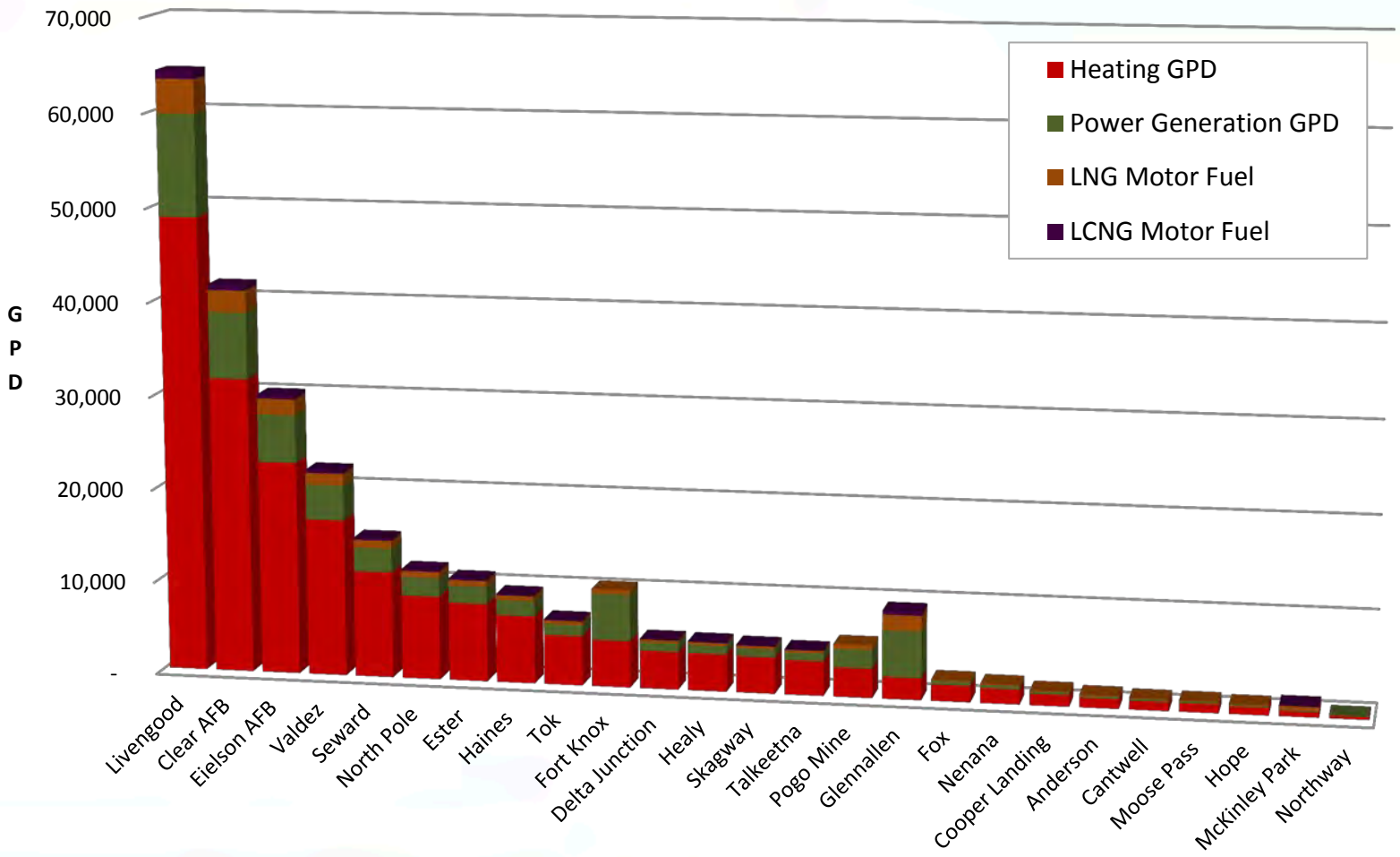
2020 Projected LNG Demand for Add'l Communities (GPD)



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Important Details

- RCA Cost of Service model used for pricing.
- No continuing subsidies used.
- Additional sales enhance the overall project, the more gas sold, the cheaper it gets for everyone.
- No cross subsidies between locations.

Implementation?

- The State needs a single experienced team of LNG developers and major construction experts to bring this project together. One that can guarantee the delivery of the project on time.
- AIDEA completes negotiations with Spectrum in a timely manner.
- AIDEA signals they want the QS offered VPS option.
- If the State wants to buy down the cost of service, it can be done by offering lower priced debt for the VPS to areas outside of SB23 intentions. In the RCA's Cost of Service model, lower interest rates pass through to the customer.

Summary

- Our site was validated by CBI.
- Our process was validated by Linde.
- We are lowest priced LNG producer in US
- We don’t need the Grant funds.
- We’ve done it before.
- We do it every day.

The End

Questions?

SPECTRUM LNG, LLC