

Assessing and training the gas line work force

“A gas line from Prudhoe Bay to the contiguous lower 48 is still on [the president’s] energy list. He has submitted an energy reorganization plan which creates a federal inspector to supervise the enforcement of permit regulations during the construction of the 4,748-mile-long gas line. The plan also calls for a seven member policy board to monitor construction.”

Alaska Economic Trends, May 1979

The topic of constructing and operating a transportation system to move North Slope natural gas to the Lower 48 is obviously not a new one. The president referred to above was Jimmy Carter, and a lot has changed since then.

Alaska’s population was 414,000 in 1979, about 60 percent of the 680,000 it is today. The median age of residents was just 26, significantly younger than the current 33½. There were nearly 13 percent more men than women; today, there are 4 percent more men. And since then, more than 15 billion barrels of crude oil have been pumped from the North Slope. But so far, a natural gas pipeline is still only a project waiting to proceed.

Since the late 1970s, people have proposed various alternatives to a gas pipeline to get the additional energy resource to market, ranging from icebreaking liquified natural gas tankers that would load product from offshore facilities in the Beaufort or Chukchi seas, to superconducting powerlines that would transmit electricity generated by gas-powered utilities on the North Slope, and even huge blimps that would float the gas to utilities in the Lower 48.

Still, the old way of transporting natural gas is widely believed to be the best alternative: us-

ing high pressure and large steel pipes. And 30 years after President Carter talked about it, President Barack Obama says building a gas pipeline is a priority project that would reduce the nation’s demand for foreign-supplied energy and provide a cleaner source of fuel to help reduce carbon emissions.

So, let’s get to work (or not if, but when?)

Given the amount of recoverable energy contained in the North Slope’s natural gas, many believe it’s almost certain the gas will be brought to market. Still, issues remain that will affect just when that happens.

Several companies are competing for the gas pipeline project. The leading contenders are TransCanada, Denali and the Alaska Gasline Port Authority.

TransCanada, a Canadian pipeline firm, proposes tying the gas pipeline into an existing distribution system in Alberta, Canada. Denali, a joint venture between BP and ConocoPhillips, is considering a similar plan, with an option to extend the pipeline to Chicago if required. The Alaska Gasline Port Authority, a coalition of North Slope, Interior and Valdez local governments, proposes a line ending in Valdez.

Many believe that an “open season” – the time when pipeline owners solicit binding contracts from producers to ship gas for a set price – will occur in 2010. Those contracts will help determine the size of the pipeline required, and the amount of labor that would be needed to build it.

The current worldwide economic malaise, though, creates more uncertainty. As global

energy consumption slows in the wake of the ongoing recession, does the world need to develop more energy resources? Will customers be willing to pay enough for natural gas to warrant investment in such a large-scale project?

It's important to remember that the actual transport of Alaska's natural gas will be years down the road, and markets then are likely to be very different than they are now. There's also a growing demand for greener energy sources. Natural gas is the current fossil fuel of choice to reduce carbon emissions, and it's likely to be many years before good alternative energy sources replace it.

Finally, requirements for permitting and possible environmental mitigation, and negotiations for leases and rights-of-way, plus likely legal challenges all create uncertainty for a gas pipeline start date.

Once ground is broken, the timeline for pipeline construction will affect the number of workers that will be needed. The trans-Alaska oil pipeline was built on a very aggressive schedule – it was completed in just 27 months. At its peak, more than 28,000 people were working on the pipeline. A less-aggressive schedule could have greatly reduced the need for so many workers and increased the length of their employment.

This article is a look at the occupations that will be needed to build and operate a natural gas pipeline, and how we might fill that need with qualified Alaska workers. It looks at the demographics of current Alaska workers, their experience and training, and examines the training the pipeline occupations require, the existing in-state training providers and how people usually advance into those occupations.

Is it too early to plan?

Certainly not. The experience of building the trans-Alaska oil pipeline left many believing that the state could have reaped more of the economic benefits of such a large construction project. Alaska's small population and its lack of a highly skilled work force meant that many of the pipeline jobs went to specialty trades workers who weren't Alaska residents. They were instru-

mental in building the first pipeline, but, for the most part, they spent the money they earned in Alaska outside the state.

While we can't tell with certainty how many of the workers on the trans-Alaska oil pipeline were nonresidents, it's widely believed that nonresidents filled many of the construction and operation jobs in the 1970s.

Quoting from another *Trends* article, from November 1976:

"Probably the greatest single factor to impact Alaska's labor force during construction of the oil pipeline has been the tremendous number of highly paid workers needed to complete the project. It is the uncertainty of just exactly what the pipeline workers will do when they are laid off that is currently affecting Alaska's economy. By looking at the type of workers who came to Alaska in search of employment on the trans-Alaska pipeline, one can get a better understanding of what pipeline workers may do when construction is finished."

Similar questions remain today, and there's a push to ensure more qualified Alaskans are employed to build and operate the gas pipeline. The Alaska Gasline Inducement Act of 2007¹ states, "the Commissioner of Labor and Workforce Development shall develop a job training program that will provide training for Alaskans in gas pipeline project management, construction, operations, maintenance and other gas pipeline related positions."²

Gas line occupations

Regardless of the gas pipeline's route, size or when it's built, it will require workers in hundreds of different occupations to build and operate it. The first requirement is to determine which occupations will be needed the most.

After consultation with potential gas pipeline operators, construction firms, training providers

¹ The Alaska Legislature ratified AGIA in May 2007 "to encourage expedited construction of a natural gas pipeline from Alaska's North Slope," according to AGIA documents.

² Alaska Statute 43.90.470

1 The 113 Gas Line Occupations

Grouped by various project functions, Alaska

Administration

Bookkeeping, accounting, and auditing clerks
 Budget analysts
 Computer and information systems managers
 Computer programmers
 Computer support specialists
 Computer systems analysts
 Cost estimators
 Database administrators
 Employment, recruitment and placement specialists
 Executive secretaries and administrative assistants
 File clerks
 First-line supervisors/managers of office and administrative support workers
 Human resources assistants, except payroll and timekeeping
 Payroll and timekeeping clerks
 Receptionists and information clerks
 Training and development specialists

Camps/Catering

Cooks, institution and cafeteria
 Cooks, restaurant
 Dishwashers
 Emergency medical technicians and paramedics
 First-line supervisors/managers of food preparation and serving workers
 First-line supervisors/managers of housekeeping and janitorial workers
 Food preparation workers
 Food service managers
 Janitors and cleaners, except maids and housekeeping cleaners
 Laundry and dry-cleaning workers
 Maids and housekeeping cleaners
 Maintenance and repair workers, general

Crafts

Carpenters
 Cement masons and concrete finishers
 Construction and building inspectors
 Construction laborers
 Construction managers
 Crushing, grinding and polishing machine setters, operators and tenders
 Electricians
 Explosives workers, ordnance handling experts and blasters
 Fence erectors
 First-line supervisors/managers of construction trades and extraction workers
 First-line supervisors/managers of helpers, laborers and material movers (hand)
 First-line supervisors/managers of production and operating workers
 Helpers, construction trades, all other

Crafts (Continued)

Helpers – carpenters
 Helpers – electricians
 Helpers – extraction workers
 Helpers – installation, maintenance and repair workers
 Helpers – pipelayers, plumbers, pipefitters and steamfitters
 Helpers – production workers
 Highway maintenance workers
 Insulation workers, floor, ceiling and wall
 Insulation workers, mechanical
 Millwrights
 Painters, construction and maintenance
 Plumbers, pipefitters and steamfitters
 Sheetmetal workers
 Structural iron and steel workers
 Welders, cutters, solderers and brazers
 Welding, soldering and brazing machine setters, operators and tenders

Environmental

Environmental engineering technicians
 Environmental science and protection technicians, including health
 Environmental scientists and specialists, including health
 Hazardous materials removal workers
 Landscape architects

Equipment Operators

Bus and truck mechanics and diesel engine specialists
 Crane and tower operators
 Excavating and loading machine and dragline operators
 First-line supervisors/managers of mechanics, installers and repairers
 Industrial machinery mechanics
 Maintenance workers, machinery
 Mobile heavy equipment mechanics, except engines
 Operating engineers and other construction equipment operators
 Paving, surfacing and tamping equipment operators
 Pile-driver operators
 Truck drivers, heavy and tractor-trailer

Logistics

Bus drivers, transit and intercity
 Dispatchers, except police, fire and ambulance
 Purchasing agents, except wholesale, retail and farm products
 Truck drivers, light or delivery services

Material Handling

First-line supervisors/managers of transportation and material moving machine and vehicle operators
 Laborers and freight, stock, and material movers (hand)

and others, 113 occupations were identified to be critical to the completion and operation of the gas pipeline. (See Exhibit 1.) They're listed in the *AGIA Training Strategic Plan*.³

The 113 occupations were simply those that have traditionally been critical in completing a

project of similar type and magnitude. All 113 will be integral in building the pipeline, based on one or more of the following factors: they will be in high demand based on normal staffing needs, they require specialized skills, or they are occupations with jobs that potential contractors have identified as hard to fill.

³The publication's full name is the *Alaska Gasline Inducement Act Training Strategic Plan: A Call to Action*. It's available on the Internet on the Department of Labor's Web site. Go to labor.alaska.gov, and click on the plan, which is in the middle column.

The 113 are more varied than one might expect. After grouping them into 10 categories

Material Handling (Continued)

Order clerks
Stock clerks and order fillers

Office and Field Engineering

Architectural and civil drafters
Cartographers and photogrammetrists
Chemical engineers
Civil engineering technicians
Civil engineers
Control and valve installers and repairers, except mechanical door
Electrical and electronic engineering technicians
Electrical engineers
Engineering managers
Engineering technicians, except drafters, all other
Environmental engineers
Inspectors, testers, sorters, samplers and weighers
Managers, all other
Materials engineers
Mechanical drafters
Mechanical engineering technicians
Mechanical engineers
Office and administrative support workers, all other
Office clerks, general
Procurement clerks
Production, planning and expediting clerks
Surveying and mapping technicians
Surveyors
Telecommunications equipment installers and repairers, except line installers
Weighers, measurers, checkers and samplers, recordkeeping

Operations

Gas compressor and gas pumping station operators
Gas plant operators
Plant and system operators, all other

Safety

Health and safety engineers, except mining safety engineers and inspectors
Occupational health and safety specialists
Occupational health and safety technicians
Security guards

Note: The *Alaska Gasline Inducement Act Training Strategic Plan: A Call to Action*, published in January 2008, identifies the 113 occupations as critical to the completion and operation of a natural gas pipeline. The plan provides more information about each occupation's labor force.

Source: *Alaska Department of Labor and Workforce Development, Research and Analysis Section*

according to the function of each occupation⁴ – the categories range from office and field engineering to safety, and camps and catering – the diversity of skills, knowledge and abilities becomes apparent.

While the gas pipeline project is fundamentally a construction and operations project, its sheer

⁴ This differs from the Department of Labor's normal aggregation using the federal Standard Occupational Classification, or SOC, code system.

size presents problems not normally encountered on the average construction job. Job sites become small cities. Their remote location requires them to be self-sufficient, so a broad range of work must be performed.

That explains why certain occupations identified as gas line-related might seem unusual to those unfamiliar with the logistics required in managing such a large project – one doesn't normally find bus drivers, laundry workers, maids and housekeeping cleaners, cooks, dishwashers, or even employment and recruitment specialists on most construction sites.

A labor force to fill those occupations

While we don't know how many workers the gas pipeline will need from each occupation, by focusing on the 113 occupations, we can help determine whether Alaska workers will be able to fill some of the increased demand once pipeline construction begins and as current workers retire.

One good indicator of the current supply of skilled workers is looking at the demographic characteristics of those workers.⁵

As touched on earlier, the median age of Alaskans has been rising. The same holds true for Alaska workers overall.

The state's overall work force is now older than it was during the first pipeline project. In 2007, 36.9 percent of Alaska's over-

⁵ Throughout this article, the age, Alaska residency and place of residence for workers was determined by matching the Alaska Department of Revenue's Permanent Fund dividend data file with the Department of Labor's wage records file.

The PFD file is a list of Alaskans who applied for a PFD. Workers included in the wage file were considered Alaska residents if they applied for either a 2007 or 2008 PFD.

The wage records file contains quarterly reports submitted by every employer subject to the state's unemployment insurance laws. Those quarterly reports contain industry, occupation, wages and place of work for each worker. The wage records are used for Alaska's Occupational Database, mentioned later in this article.

2 Workers' Age Affects Supply

Older workers in selected occupations, Alaska 2007

	Percentage Age 45 and Over	Percentage Age 50 and Over
All Occupations	36.9%	25.0%
Gas Line Occupations	37.9%	25.2%
Equipment Operators and Mechanics¹		
Pile-driver operators	50.5%	40.9%
Crane and tower operators	53.4%	40.7%
Supervisors of mechanics, installers and repairers	64.3%	40.3%
Safety		
Occupational health and safety specialists	66.7%	50.0%
Health and safety engineers, except mining safety engineers and inspectors	62.9%	41.2%
Operations		
Gas plant operators	38.8%	26.3%
Gas compressor and gas pumping station operators	33.3%	20.3%
Logistics		
Bus drivers, transit and intercity	62.7%	48.6%
Truck drivers, light or delivery services	34.8%	21.7%
Office and Field Engineering		
Engineering managers	61.6%	41.8%
Inspectors, testers, sorters, samplers and weighers	31.1%	20.0%
Administration		
Cost estimators	56.5%	40.6%
Training and development specialists	54.8%	36.4%
Environmental		
Environmental engineering technicians	46.9%	31.0%
Environmental scientists and specialists, including health	40.5%	26.8%
Camps/Catering		
Cooks, institution and cafeteria	52.4%	34.8%
Laundry and dry-cleaning workers	44.5%	31.6%
Crafts		
Construction and building inspectors	69.8%	56.3%
Construction managers	62.8%	46.0%
Supervisors of construction trades and extraction workers	61.4%	42.1%
Material Handling		
Supervisors of transportation and material moving machine operators	55.8%	37.9%
Laborers and freight, stock and material movers (hand)	25.5%	15.4%
Order clerks	33.6%	20.5%

¹ The equipment operators and mechanics occupational category is referred to as the equipment operators category in the *Alaska Gasline Inducement Act Training Strategic Plan: A Call to Action*.
Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

all work force was at least 45 years old and 25.0 percent was 50 or older.⁶

The 113 gas line occupations are even slightly older – 37.9 percent of Alaskans working in

⁶ If PFD information wasn't available for a worker (the worker's date of birth), then that worker wasn't included in the wage statistics for this article.

those occupations in 2007 were 45 or older and 25.2 percent were 50 or older.

Looking at the categories of occupations by job function (see Exhibit 1), the equipment operators and mechanics category is at the top of the list as far as workers' ages, indicating a need to recruit new and younger workers for gas pipeline construction. (See Exhibit 2.) Nearly half, 49.1 percent, were age 45 or older in 2007 and 32.4 percent were 50 or older.

At the other extreme, material handling occupations – often entry level jobs – have the fewest older workers: 26.6 percent were age 45 or older in 2007 and 16.5 percent were 50 or older.

Some occupations require extensive experience before workers become fully qualified and competent. For example, in most cases inspectors need experience in doing the tasks they're inspecting. Normally supervisors and foremen were regular workers first, so having a larger percentage of older workers in those occupations isn't surprising.

More than 60 percent of construction supervisors and managers, mechanics supervisors, engineering managers, and health and safety engineers were 45 or older in 2007, and half of construction and building inspectors and occupational health and safety specialists were 50 or older.

The high pay and long hours that will likely occur during the gas pipeline construction may cause some workers to remain in the work force, and lure others back. Still, many of today's workers age 50 and older will retire before pipeline construction begins. Their departure from the work force gives younger workers more chances to move up, but that also presents a challenge to ensure the retired workers' replacements are ready for the gas pipeline project in terms of their knowledge,

skills and experience.

Training Providers for Gas Line Occupations Alaska, 2007 **3**

When demand exceeds supply

There's a reason we refer to a "labor market." Labor, just like housing, food and energy, operates by the basic economic rules of supply and demand. When consumers of skilled labor can't find what they need in the local labor market, they offer higher wages. Since the suppliers of labor – workers – can move to fill this demand, the market reaches an equilibrium, where just enough labor providers satisfy the labor demand.

In extreme conditions, labor providers (workers) will move long distances, including across state lines.

As mentioned earlier, it's widely believed that's what happened with the trans-Alaska oil pipeline construction: that many of the oil pipeline construction jobs went to nonresidents. In 1973, the average monthly employment in the construction industry was below 8,000. Three years later, it was more than 30,000, and by 1979 the average monthly employment was just below 11,000.

After the construction was done, the work of operating the oil pipeline began. Those more permanent jobs – jobs such as pump station operators, industrial machinery mechanics, various engineering occupations, and inspectors and safety specialists – were also filled by a large number of nonresidents.

Similar jobs will be available for Alaska workers after the gas pipeline is complete. Like the

Associated Builders and Contractors of Alaska
AGC Safety Inc.
Alaska Computer Essentials
Alaska Inventor and Entrepreneurs Association
Alaska Ironworkers
Alaska Joint Electrical Apprenticeship Training Trust
Alaska Laborers Training Trust
Alaska Medical Training Services
Alaska Operating Engineers Apprentice Training Trust
Alaska Technical Center
Alaska Technology Learning Center
Alaska Trowel Trades Apprenticeship and Training Trust
Alaska Vocational Technical Center
Alaska Works Partnership Inc.
Arctic Safety Training & Consulting
Asbestos Removal Specialists of Alaska
Career Academy
Center for Employment Education
Charter College
Delta Mine Training Center
Environmental Management, Inc.
Fairbanks Alaska Carpenter Training Center

Fairbanks Area Painting and Allied Trades JATC¹
Fairbanks Area Plumbers and Pipefitters JATC¹
GeoNorth
Heat and Frost Insulators and Asbestos Workers Local 97
Iliagvik College
International Union of Bricklayers and Allied Craftsmen Local 1
New Frontier Vo-Tech Center
Northern Industrial Training
Northwest Technical Services
Project Education Residential School
Satori Group Inc.
SERRC – Alaska Vocational Institute
Southern Alaska Carpenters Union Training Center
Southwest Alaska Vocational & Education Center
University of Alaska Anchorage
University of Alaska Fairbanks
University of Alaska Southeast
Vocational Training & Resource Center
Wayland Baptist University – Anchorage Campus
Wilderness Medicine Institute
Yuut Elitnaurviat

Note: This is a list of training providers that are eligible to receive Workforce Investment Act funds; it's not a list of all training providers in the state. Some of these providers haven't had recent graduates from a pipeline-related study program, but officials with those programs said they would be willing to offer classes if there was enough interest.

¹ JATC is an acronym for Joint Apprenticeship and Training Committee.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

operation jobs on the oil pipeline, the jobs are year-round and they're required for the life of the pipeline.

Unlike in the pipeline construction era of the mid-1970s, the Department of Labor now has the ability to determine the residency of workers, including those in the 113 gas line occupations. In 2007, the most recent year for which data are available, 17 percent of the people employed in the 113 occupations were nonresidents, which is slightly below the average for all occupations – 19 percent.⁷

How to fill the supply gap

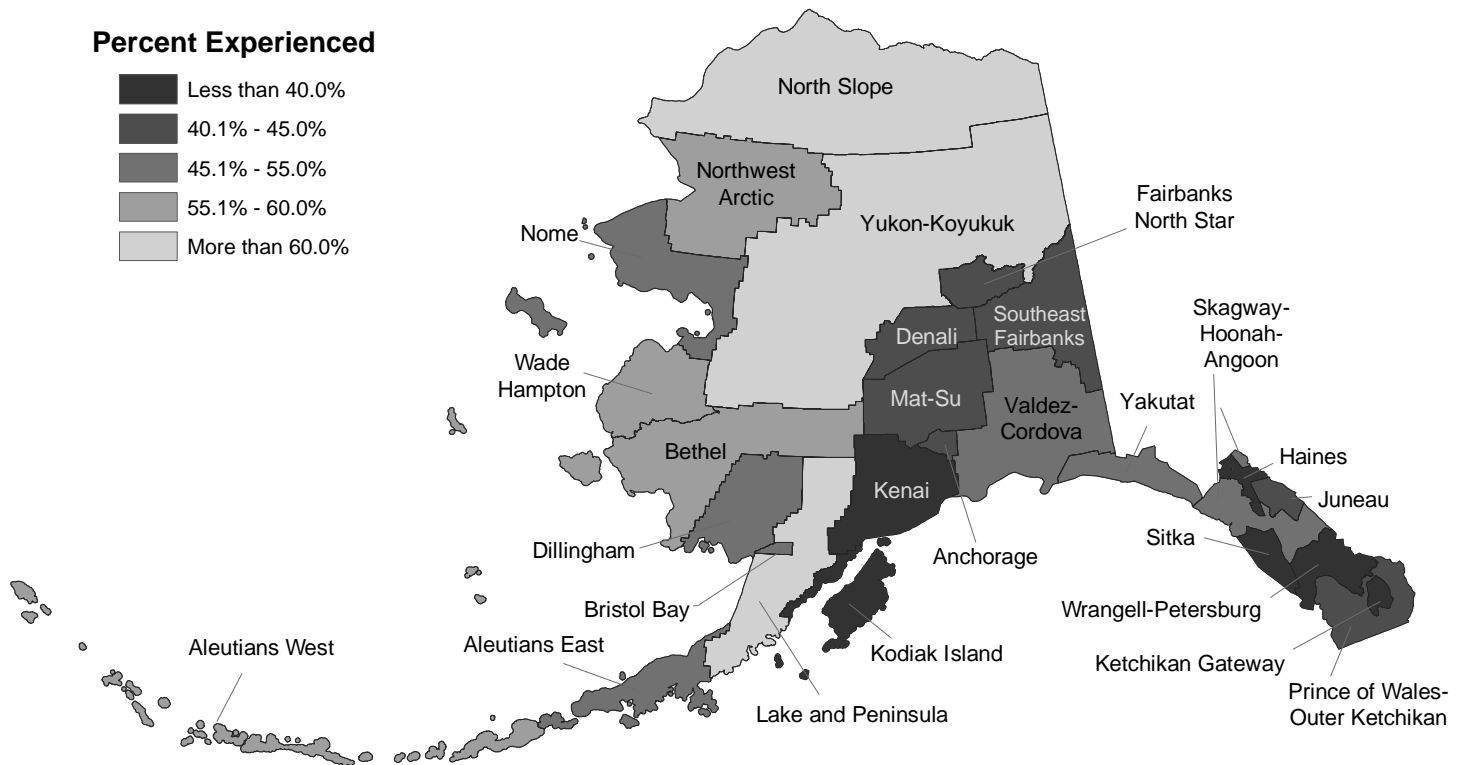
Training is the most obvious way to increase the supply of workers prepared to work on the gas pipeline.

Of the 113 gas line occupations, 53 only require on-the-job training of less than 12 months. Many of the 53 occupations will have

⁷ As mentioned in an earlier footnote, Alaska residency was determined by matching the PFD data file with the wage records file.

4 Where the Experienced Alaskans Are

Workers who have experience in the 113 gas line occupations,¹ 2007



¹ A worker was considered experienced in an occupation if he or she received wages in that occupation during any four quarters from 2005 through 2007.
 Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

the highest employment levels – jobs like construction laborers, skilled craftsmen helpers, and housekeeping-related workers in the camps.

Conversely, 60 of the 113 occupations require extensive on-the-job training, significant work experience or a certificate or degree in an appropriate field. Given the expected competition for gas line jobs, attaining only the minimum amount of training and experience required for a job may not be enough. Alaska workers will be competing against a national – and possibly international – pool of workers, so providing Alaska workers with more training helps ensure their chance for employment.

Fortunately, Alaska already has schools and programs in place to train workers for the gas line occupations; they’re expected to expand and increase in number as construction of the gas pipeline gets closer. The *AGIA Training Strategic Plan* identifies 41 Alaska-based

training providers and various campuses of the University of Alaska system that provide training in gas line-related occupations. (See Exhibit 3.)

Typical progressions for careers

The Department of Labor researched the typical career movements of Alaska workers and used that data to create the Alaska Career Ladder. The Department of Labor tracked and analyzed actual occupation-to-occupation changes that Alaska workers made over a six-year period, from 2001 through 2006.⁸

The Alaska Career Ladder shows that there can be good chances for advancement for workers in lower-skilled and lower-wage jobs. It identi-

⁸ More detail about the Alaska Career Ladder is available in last month’s *Trends*. For current and past *Trends* issues online, go to the Department of Labor Web site at labor.alaska.gov and click on the *Trends* cover in the lower right. The *Trends* link is also available at laborstats.alaska.gov, the home page for the Department of Labor’s Research and Analysis Section.

Experienced Alaska Workers Are Out There

Gas line jobs may lure them back, Alaska

5

Occupation	Workers with Experience in the Occupation			Workers Employed in the Occupation
	Resident workers with experience in the specific occupation ¹	Of the experienced workers, those who were employed in another occupation in 2007	Of the experienced workers, those who were employed in a less-skilled occupation in 2007 ²	Workers employed in the occupation in 2006 who filed for unemployment benefits in 2007 ³
Construction laborers	6,502	2,361	848	2,752
Laborers and freight, stock and material movers (hand)	5,222	2,333	1,334	1,251
Carpenters	4,102	1,262	195	1,618
Maintenance and repair workers, general	3,615	1,166	381	530
Operating engineers and other construction equipment operators	3,468	973	405	1,348
Security guards	2,246	952	505	315
Truck drivers, heavy and tractor-trailer	2,713	821	203	754
Electricians	2,133	492	171	685
First-line supervisors/managers of construction trades and extraction workers	1,003	444	133	163
Helpers – installation, maintenance and repair workers	914	374	231	231
Plumbers, pipefitters and steamfitters	1,784	348	53	506
Welders, cutters, solderers and brazers	589	318	65	161
Food service managers	461	298	38	62
Computer support specialists	1,135	295	126	60
First-line supervisors/managers of mechanics, installers and repairers	655	283	102	51
Bus and truck mechanics and diesel engine specialists	722	272	7	104
Environmental scientists and specialists, including health	553	253	2	19
Construction managers	919	242	42	103
Mobile heavy equipment mechanics, except engines	680	228	11	98

¹ A worker was considered experienced in an occupation if he or she received wages in that occupation during any four quarters from 2005 through 2007. A single worker can be considered experienced in multiple occupations using this criteria.

² The workers in this column are a subset of the number of workers in the second column.

³ A worker was considered employed in the occupation where he or she received the most wages in 2006. A worker was only considered employed in one occupation during that year.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

fies 76 occupations that show strong possibilities for career advancement into one or more of the 113 gas line occupations.

For example, people working as construction laborers have shown strong tendencies to move up and fill positions in seven of the 113 gas line occupations: cement masons, paving equipment operators, insulation workers, sheetmetal workers, hazardous materials removal workers, explosives workers, and excavating and loading machine operators.

Who has experience?

Another way to fill gas line-related jobs is by recruiting people with experience in the occupations. By reviewing the quarterly unemployment insurance tax information that employers file with the state, and Alaska's Occupational

Database,⁹ we determined the number of people with previous experience in gas line occupations¹⁰ who weren't employed in those occupations in 2007. We also determined the number of people employed in gas line occupations in 2006 who filed claims for unemployment insurance benefits in 2007.

It's not surprising that the largest number of workers with gas line-related experience live in the highly populated Southcentral region. However, when we consider the percentage of total workers with such experience, it's apparent that all regions in the state have workers with experi-

⁹ For more information on Alaska's Occupational Database, go to Research and Analysis' Web site at laborstats.alaska.gov, click on "Occupational Information" on the left, then "Occupational Database."

¹⁰ Throughout this article, a worker was considered experienced in an occupation if he or she received wages in that occupation during any four quarters from 2005 through 2007. A single worker can be considered experienced in multiple occupations using this criteria.

ence in the 113 gas line occupations. (See Exhibit 4.) Many of Alaska's more rural areas have workers experienced in the occupations that are needed most for building a gas pipeline.

Some of the workers with gas line experience have moved up to higher-paying jobs and may not want to return to their old jobs. Still, many of the highly skilled gas line jobs will provide high wages.

Looking at carpenters as an example, there were more than 4,100 workers in Alaska in 2007 who had worked at least four quarters from 2005 through 2007 as carpenters. (See Exhibit 5.) For the purposes of this article, we considered those workers to be experienced in the occupation, though a worker might have at least four quarters of wages in more than one occupation during those years. Of the 4,100 experienced carpenters, more than 1,200 in 2007 made the majority of their wages in a different occupation, and of those, nearly 200 were working in occupations that required less education, training and experience.

Also in 2007, 1,600 people who made the majority of their income as carpenters in 2006 filed for unemployment insurance benefits at some point during the year. Those 1,600 would also be a supply of workers to fill the demand for pipeline occupations.

Not your average project

Building the gas pipeline is far from a typical large construction project. While some of the required skills can be taught and some necessary experience gained through other work, certain aspects of employment on the gas line will be new to many workers.

Like the trans-Alaska oil pipeline project, many workers will be living in camps for extended

times – particularly those working on the most remote spreads. Rotations might not be as grueling as the first pipeline's, where many worked for eight weeks on and two weeks off. But it's likely workers will be in camp for several weeks at a time, working 12-hour days, seven days a week.

Transportation to the camps will be provided by the employers, and as a worker, missing your plane could mean losing your job. And in such potentially dangerous work environments, workers will be expected to attend safety and health training classes. They should also expect pre-employment and then random drug testing, and they'll be working and living in drug- and alcohol-free camps.

But, if the experiences of those who worked on the first pipeline are any indication, the hard work and harsh working conditions often come with significant monetary rewards.

In closing, a quote from another *Trends* issue is appropriate. This one is from April 1976:

*"It is important to note that due to the massive construction effort necessary to build the Alaskan oil pipeline from Prudhoe Bay, the effect of future energy resource development may never have such a dramatic impact on the labor force in Alaska."*¹¹

For many reasons, the economic impact of building a gas pipeline will likely be only a fraction of the impact from the first pipeline. Even so, it's still a big project that will still have an impact on Alaska's economy.

¹¹ The authors for the *Trends* excerpts in this article: Lynn Pistoll and Barbara Baker (May 1979); Christopher L. Miller (November 1976); and author not listed (April 1976).