The Oil Industry

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Alaska's oil and gas industry is a large pillar in the economy, a small one in the workforce

Oil has played central roles in Alaska's economy and psyche since 1957, when the Kenai fields were discovered. The economic implications of this find were important in the statehood movement and Alaska's admission to the Union. In 1968, the discovery of the massive Prudhoe Bay field ushered in a new era of prosperity for Alaska. The jobs directly created by the oil industry have never been great in number, but they remain some of the most sought after in the state's labor market. A highly skilled workforce commands the highest wages in Alaska. A certain mystique is associated with oil patch employment, evoking visions of hard physical work performed in a harsh arctic environment. These jobs are the Alaska equivalent of Seattle's software workforce, Detroit's auto industry or New York's financial sector.

Industry is a major force in the economy

Seventeen percent of the state's gross product flows from oil. Revenues from the industry consistently bankroll 80 percent of unrestricted dollars in the state general fund. Alaska's Permanent Fund is based on oil. The industry is a major source of local property taxes in communities where it is present. The oil industry is, in short, a mainstay of the economy of the state of Alaska.

In this article, a direct oil and gas industry employer is defined as a company primarily engaged in oil and gas extraction, drilling or support activities for oil and gas operations, (ConocoPhillips, Alaska Petroleum Contractors, Halliburton Energy Services, Forest Oil Corporation, Houston/NANA.) (See Exhibit 1.) Using this narrow definition, oil and gas producing employment will be referred to as "oil industry employment." In 2002, oil

Alaska's Largest Employers 1
In the oil industry – 2002

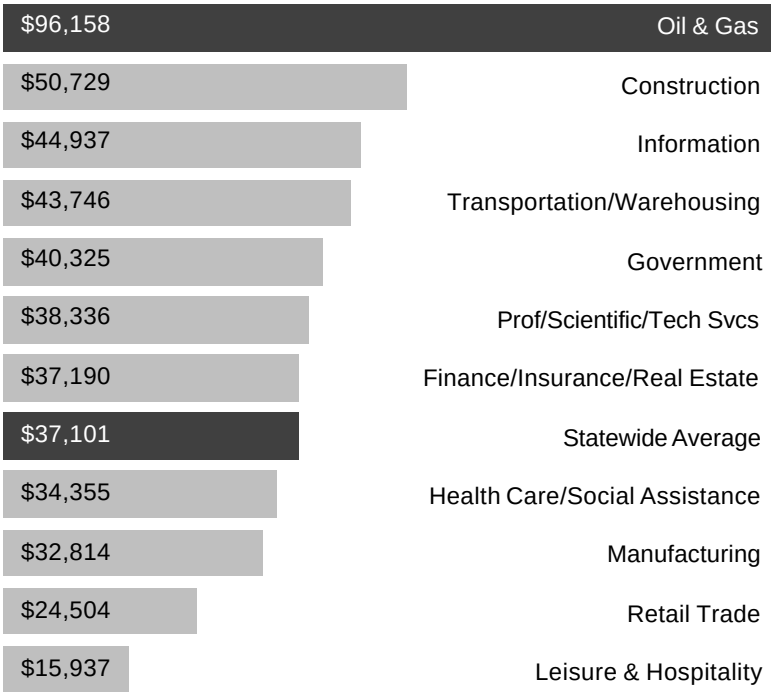
		Annual Avg. Employment
1	BP Exploration	1,549
2	Alaska Petroleum Contractors	1,210
3	VECO	1,127
4	ConocoPhillips	946
5	Peak Oilfield Service Company	671
6	Nabors Alaska Drilling Company	558
7	Schlumberger Technologies	419
8	Houston/NANA Joint Venture	412
9	Union Oil of California (Unocal)	357
10	Halliburton Energy Services	352
11	Doyon Drilling	202
12	Norcon	155
13	Baker Hughes Oilfield Operations	133
14	Kakivik Asset Management	114
15	M-I LLC	103
16	Fairweather E&P Services	80
17	ASCG Inspection Services	79
18	R & K Industrial	78
19	Inlet Drilling	75
20	CCI, Inc.	63

Note: Numbers represent companies' total employment, not all of which is necessarily in the oil industry. See note at end of article.

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

2 Oil Earnings in a League of their Own

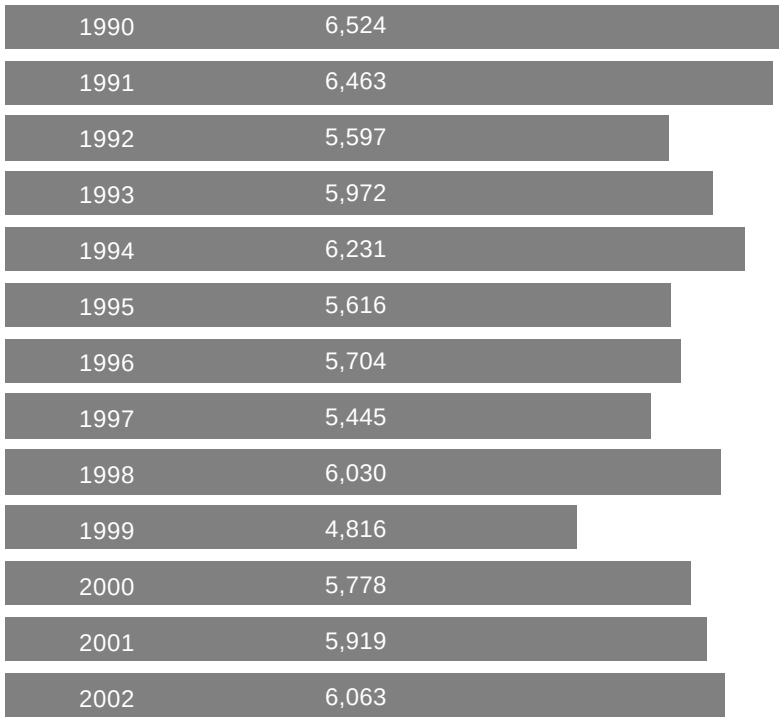
2002 annual average wage and salary



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

3 Prudhoe Bay Employment

Average annual oil and support industries



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

industry employment stood at 8,800, and represented only three percent of all wage and salary employment in Alaska. If this definition were broadened to include pipeline transportation (mostly Alyeska), petroleum refineries and other downstream operations, the percent of total wage and salary employment would climb to nearly four percent. Because oil industry earnings are nearly three times Alaska's average earnings, payroll impacts are more impressive. (See Exhibit 2.) Oil industry employment represents seven percent of all wage and salary payroll, and if pipelines and downstream operations are included the share grows to nine percent.

Thousands of other jobs service this industry, but they are not classified as oil industry employment. For example, in 2002 of the more than 6,000 jobs in Prudhoe Bay, 27 percent were not associated with oil industry employers. Jobs directly created by the oil industry, but not identified as oil industry employment include catering, security, construction contracting, transportation, engineering, and other support services. In Anchorage, Alaska's headquarters for the industry, the size of the workforce directly attached to the oil and gas industry but not identified as oil industry employment is probably even larger. According to the University of Alaska Anchorage, nearly a quarter of all jobs in the state can be attributed to petroleum. If the Permanent Fund and the Constitutional Budget Reserve were included in the aggregation, the share would move closer to a third of all jobs. (See Exhibit 3.)

Employment peaked in 1991 but 2001 was fairly strong

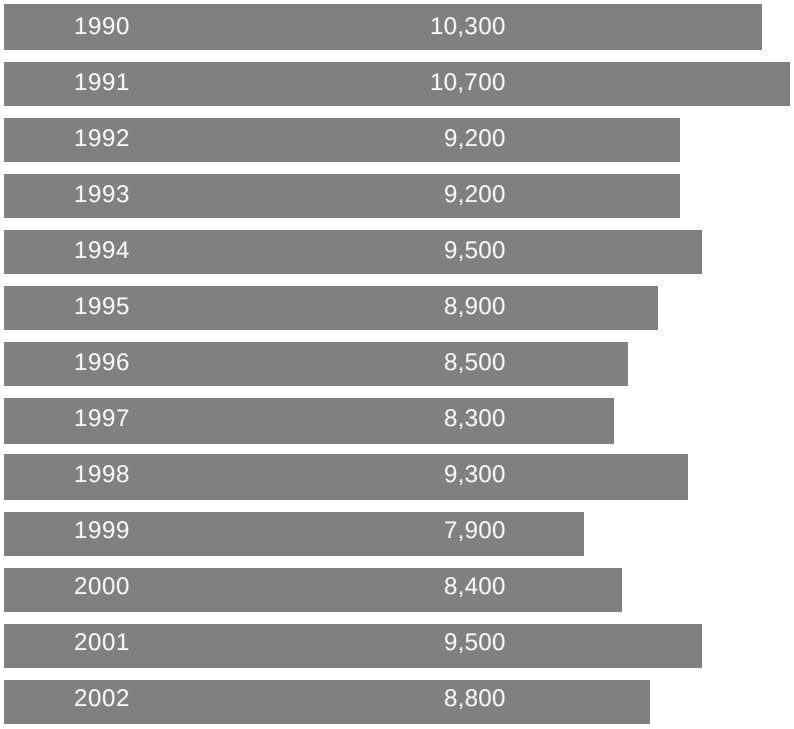
For most of the past decade, employment levels in the oil industry fluctuated from year to year, with an overarching declining trend punctuated by strong recoveries. Oil industry employment peaked in 1991 at 10,700, three years after oil production reached its high point in 1988. (See Exhibits 4 and 5.) The fact that national oil industry employment peaked nearly a decade earlier in 1982, signals the relative youth of Alaska's oil industry. (See Exhibit 6.) Factors other than production levels and prices help explain

the changing size of the industry's workforce. Over the decade dramatic improvements in technology affected employment levels. Major oil producers increasingly relied upon contractors, consultants, outside suppliers and temporary workers to perform tasks previously performed by their permanent staff. Because these employers were not identified as oil producers, employment gains and losses caused by oil related work were increasingly attributed to other industries.

In 1991-1992, British Petroleum and other oil industry employers and contractors responded to declining oil prices with major restructuring and consolidation. For the next three years employment remained relatively stable. Weak oil prices and other factors eventually caught up with the industry in late 1994 and 1995 when Atlantic Richfield made major cuts in the workforce. The downsizing cost the industry 1,800 jobs between 1991 and 1995, a record loss. These losses were spread among the major oil producers and oil field service companies. Smaller losses continued through 1997. In 1998 employment in Alaska's oil patch began a strong recovery with the development of Alpine, Tarn, and Badami, complemented by drilling at West Sak and preliminary work at North Star, Liberty and other fields. This new investment led to an optimism captured by Atlantic Richfield's mantra "no decline after 1999". In fact, as a result of these developments, overall North Slope production stabilized in 2001 for the first time in about a decade and should remain relatively stable for a number of years.

While oil production shows signs of stability, oil prices continue to fluctuate, sometimes widely, driven by world markets. Changes in the price per barrel can affect employment levels in the state. As an example, oil prices plunged from nearly $19 per barrel in 1997 to $12.55 in 1998. Near-record employment losses followed in 1999 when oil industry employment fell below the 8,000 level for the first time since 1983. (See Exhibit 4.) These reductions reverberated throughout the state's economy. That year total employment in Alaska grew by barely one percent compared to 2.3% in 1998. In fact, nearly every

Oil Industry Employment In Alaska 4

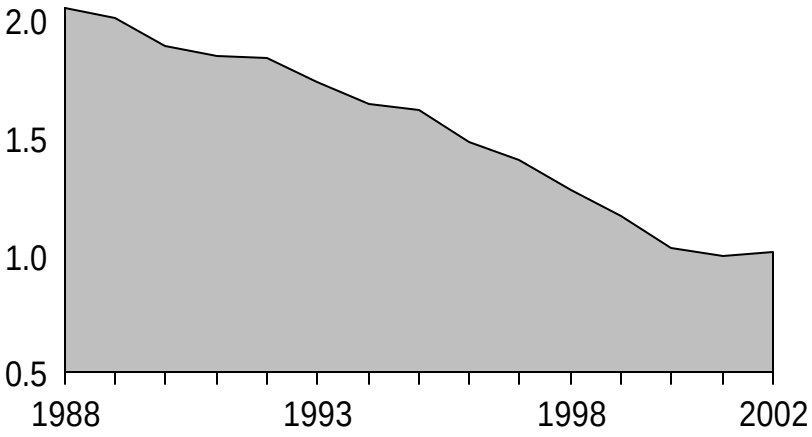


Note: See explanatory note at end of article.

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

Oil Production Has Fallen Faster Than oil industry employment 5

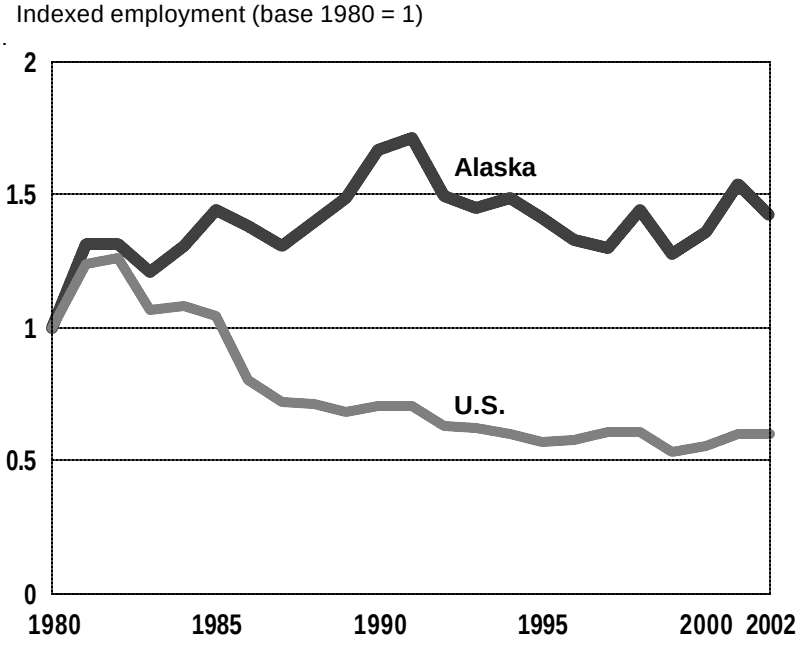
Millions of barrels of oil per day



Source: Alaska Department of Revenue, Oil and Gas Division

year of sub-par employment growth in the overall economy over the past decade coincided with weak years in the oil patch—evidence of the multiplier effect the industry has on the state's economy. By late 2000, recovery was in full swing and in 2001 employment reached a ten-year high. This peak was nearly 1,600 jobs higher than the industry's nadir in 1999, a recovery which most observers had not thought possible. The near concurrent development of both the Alpine and North Star oil fields was the major reason for this strong upswing. A factor contributing to the resurgent employment involved the Alaska construction of large oil modules. Historically these had been built in the lower 48 states or overseas but now were being fabricated in Kenai and Anchorage. The year 2000 was momentous for another reason: Alaska's largest oil industry employer and the discoverer of the Prudhoe Bay fields, Atlantic Richfield, disappeared from the scene when it sold its assets to British Petroleum and Phillips (now ConocoPhillips).

6 U.S. Oil Industry Employment
Peaks in 1982



Sources: U.S. Department of Labor, Bureau of Labor Statistics; Alaska Department of Labor and Workforce Development,Research and Analysis Section

Work on the Alpine and North Star projects was nearing completion by late 2001 and employment began to fall steeply. By 2002, oil industry employment had declined by eight percent and by June of 2003 it has reached near 1999 levels. While high oil prices have prevailed over the past four years, employment has continued this downward trend. Few new projects are underway and little is on the horizon that would change this pattern in the near term. Most job losses have been in oil field services and the contractor share of the industry. British Petroleum trimmed its workforce by moving the exploration department out of the state, but contractors, drillers and other supporting employers account for more than 90 percent of the reductions.

On the brighter side, a number of independents have entered the market in recent years, and Cook Inlet has experienced some resurgence in activity. The new players include Anadarko, XTO Energy, Forest Oil Corporation, Evergreen, Pioneer, Winstar, the French company Total, and a number of others. Winstar was formed by a group of Alaska investors. Arctic Slope Regional Corporation recently announced plans to expand their oil service contracting operations to include exploration and production. The phenomenon of independents' moving into what were considered mature fields by larger producers and breathing new life into them has happened in other places in the country, such as the Gulf of Mexico.

Most of the workforce is in the North Slope, Anchorage, and Kenai

Three of Alaska's boroughs, Anchorage, the North Slope, and the Kenai Peninsula, account for over ninety percent of oil patch employment. (See Exhibit 7.) Production facilities are based in the latter two while management headquarters are typically located in Anchorage. The North Slope has the largest concentration of oil industry workers. The oil industry accounts for nearly half of the North Slope's wage and salary employment. Alaska's mature oil province, the Kenai Peninsula, has the most diverse hydrocarbon industry in the

state—oil and gas production, pipeline transportation, a liquid natural gas facility (LNG), an oil refinery and a urea-ammonia fertilizer plant. These players represent 10 percent of the Peninsula's wage and salary employment and 18 percent of the payroll. Most oil industry employment in Valdez and Fairbanks involves the transport of North Slope oil. Approximately 15 percent of Valdez's direct employment is tied to the Trans-Alaska Pipeline. Although direct oil industry employment is relatively small, Fairbanks is a major logistic and supply center for the North Slope. Valdez and Fairbanks are also home to oil refineries.

Although most of the jobs in the industry are located in a limited number of geographic areas, the workforce is drawn from all around the state and nation. This is particularly true for the North Slope, where very few oil workers reside. For example, there are only a handful of oil industry jobs in the Mat-Su Valley but three percent of the borough's labor force commute to the North Slope to work. Many residents of the Kenai Peninsula, which has the second highest concentration of oil industry related jobs, work in the oil industry elsewhere. According to the 2000 Census, 755 Kenai Peninsula residents worked on the North Slope, a figure exceeded only by Anchorage (1,541) and the Mat-Su Borough (813). Over the past decade, between 22 and 29 percent of Alaska's oil industry workers have been nonresidents. (See Exhibit 8.) In places like Fairbanks, Anchorage, Valdez and Kenai, local residents make up a much larger percentage of the oil industry workforce. There is probably not an area in the state that does not send some of its workforce to Alaska's oil fields.

How does Alaska compare to other oil producing states?

Since 1979, Alaska has been the nation's number two oil-producing state but one would not know it from the size of its workforce. In 2002 Texas produced 15 percent more oil than Alaska employing an oil industry workforce of 133,802, 15 times larger than Alaska's. (See Exhibit 9.)

Oil Industry Employment 7

By location – 2002

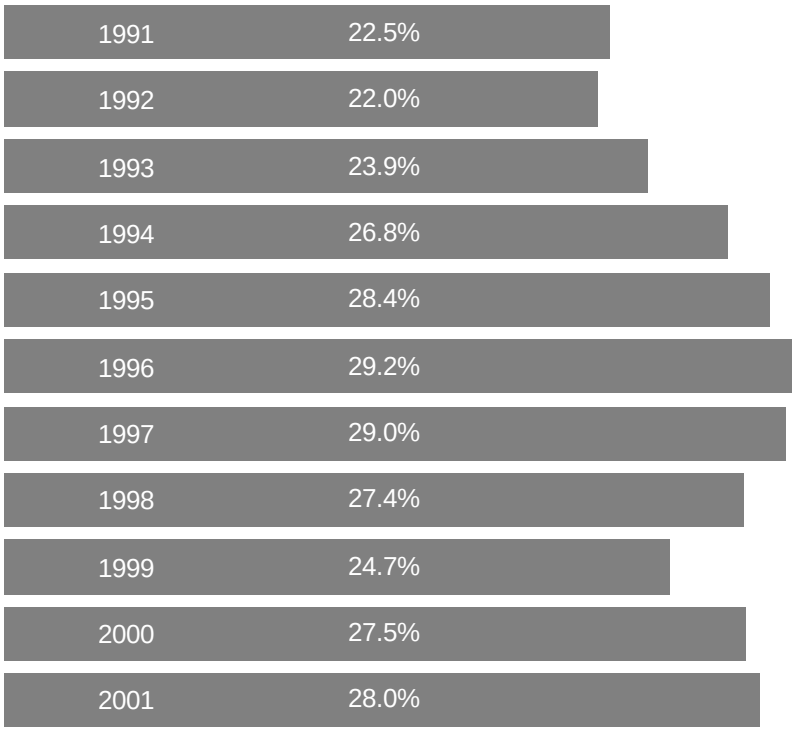
	Oil Industry	Petro-chemical/ Refinery	Oil Transpor-tation	Total	Percent
Statewide	8,761	732	1,036	10,529	100%
Anchorage	2,897	15	343	3,255	31%
Fairbanks North Star	49	221	202	472	4%
Kenai Peninsula	1,266	473	15	1,754	17%
North Slope	4,424		41	4,465	42%
Valdez-Cordova	23	23	375	421	4%
Other	102		60	162	2%

Note: See explanatory note at end of article.

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

Percent Nonresident Workers 8

In Alaska's oil industry



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

Oklahoma, with oil production one fifth that of Alaska, employed a workforce nearly three times larger. Alaska produces 17 percent of the nation's oil with only 2.6 percent of the industry's U.S. workforce. (See Exhibit 10.)

One of the reasons for the state's relatively small workforce is that Alaska oil fields enjoy economies of scale. Prudhoe Bay accounts for 45 percent of the North Slope's production and is the largest oil field in the nation. Large fields do not necessarily require more workers than smaller fields. Other fields on the North Slope such as Kuparuk (second largest), Alpine, Milne Point, and Liberty are among the nation's larger oil fields. In Texas, Oklahoma, and other oil producing states, oil is produced from large, medium and very small fields. They also produce more gas commercially. In 2001, Texas had 128,823 operating "stripper wells," which produce 10 barrels of oil or less per day. In many states, there are literally hundreds of "mom and pop" type oil producers, but such small scale efforts do not currently exist in Alaska. The rig count of current drilling operations is an indicator of activity level; the June 2003, Baker Hughes rig count showed 5 for Alaska, 466 for Texas and 154 for Louisiana. Even the count in Ohio was higher! If Alaska's oil fields were not so remote, employment in Alaska's oil patch would be considerably higher. Oil fields now considered marginal or noneconomic would be viable in a more populated, less remote environment.

Company headquarters are elsewhere

Few oil companies are headquartered or regionally based in Alaska. This means that much of the employment associated with Alaska oil production is located elsewhere. Although Alaska's oil production represents 58 percent of BP's domestic production and 84 percent of Conoco/Phillips' production, company headquarters are located in other parts of the nation and world. This is also true for many of the oil field service companies and contractors. Other corporate functions such as planning and research are undertaken in places like Houston, which is home to nearly 60,000 oil industry workers. Many of these workers are servicing oil industry activity elsewhere in the country and world.

Firms like Alaska Petroleum Contractors, VECO, Winstar, and Houston/NANA are home grown and headquartered in the state. But nearly all the Alaska oil industry workforce is dedicated to the production of Alaska oil, and is not involved in worldwide development. There are, of course, exceptions. Some Alaska based firms have used their arctic expertise to perform work in places like Sakhalin Island.

Not only does Alaska have a relatively smaller oil extraction workforce, it also has a relatively smaller transportation infrastructure and fewer down-stream operations, such as refineries. While the state has an 800-mile pipeline and a number of shorter ones, they do not compare to the thousands of miles of pipeline that snake through other states. There are a number of reasons why there are fewer downstream-type operations. Alaska is distant from consuming markets and it is more cost effective to ship crude oil long distances than refined products. Refineries in Alaska service

9 Employment and Production

Oil industry by state – 2002

	Oil and Gas Employment	Petroleum Refinery Employment	Pipeline Transportation	Annual Oil Production (Millions of barrels)
Alaska	8,761	732	1,037	359.3
Texas[2]	133,802	20,960	15,455	412.0
California[1]	16,441	13,447	n/a	258.0
Colorado[2]	7,257	372	790	17.7
Louisiana[2]	69,009	9,536	2,294	93.5
Oklahoma	25,031	2,206	1,625	66.6
New Mexico	9,765	611	1,002	67.0
Wyoming	9,903	834	610	54.7

Note: Employment data are preliminary for 2002, except for California.
[1] Employment data are for year 2001.
[2] Employment averages based on first three quarters of 2002.

Sources: Alaska Department of Labor and Workforce Development,Departments of Labor, Texas, California, Colorado, Louisiana, Oklahoma, New Mexico, and Wyoming. Energy Information Administration

only local demand, which is relatively small. These refineries include Williams and Petro Star in Fairbanks, Tesoro in Kenai, and Petro Star in Valdez. There are two downstream operations that are exceptions—the Phillips LNG operation and Agrium's urea plant on the Kenai Peninsula. Both of these operations export their products to national and international markets.

Earnings in the oil industry are high

The oil industry provides the highest annual average wages in Alaska, $96,158 in 2002. (See Exhibit 2.) This was nearly 160 percent above the all-industry average of $37,101. Several reasons underlie this large pay differential. Some significant ones include the profitability of the industry, the high skill and experience level of its workforce and the demanding work schedules. Overtime, mostly stemming from scheduled shift rotations on the North Slope or on the platforms, plays a big role and significantly enhances annual earnings. The most common shift rotations are based on a schedule of one week on/one week off or two weeks on/two weeks off. Often employees on remote sites are scheduled to work 84 hours a week, which would translate into 40 hours of straight time and 44 hours of overtime.

Other reasons for the higher pay include remote work sites, the hazards of some occupations, and the extreme climate encountered in Alaska's oilfields. Moreover, an incentive premium is most likely inherent in the hourly pay to compensate workers for the prolonged periods of separation from their families. Long tenure in the industry is also reflected in hourly pay rates.

Wages in oil producer companies tend to be higher than those in oilfield or drilling support firms. Producer firm employment also provides greater job security. Work in support firms is more project-oriented, and often terminates upon completion of the project. This partially explains the dramatic variance in employment levels that characterizes oil support industries.

It is a high skill industry

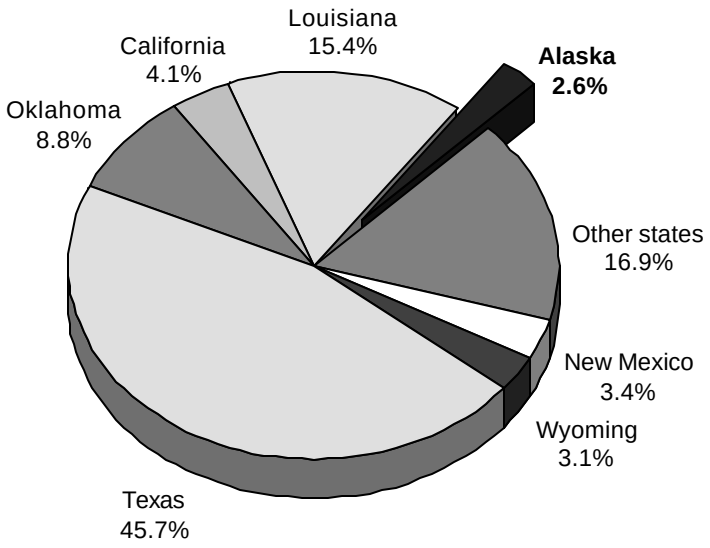
The industry's workers are known not only for their high pay, but also for their expertise and endurance. Workers are often very specialized and hold occupations that exist only in the oil industry. They are part of a global workforce and many Alaska workers have worked in oilfields in other parts of the world.

In general, the industry employs careful and selective hiring practices. Potential workers undergo thorough scrutiny. According to industry employers, hiring, training, transportation to and accommodations at remote sites are high cost expenses, and careful personnel selection plays a pivotal role in business success. Usually the oil industry can hire employees from a large candidate pool. Job seekers face stiff competition from other applicants attracted by the high wages.

In 2002, nine oil producer firms formed the core of the Alaska oil industry while 65 businesses contracted with these producers to perform oil

Nationally, Alaska Plays Small 10

Role in oil industry employment



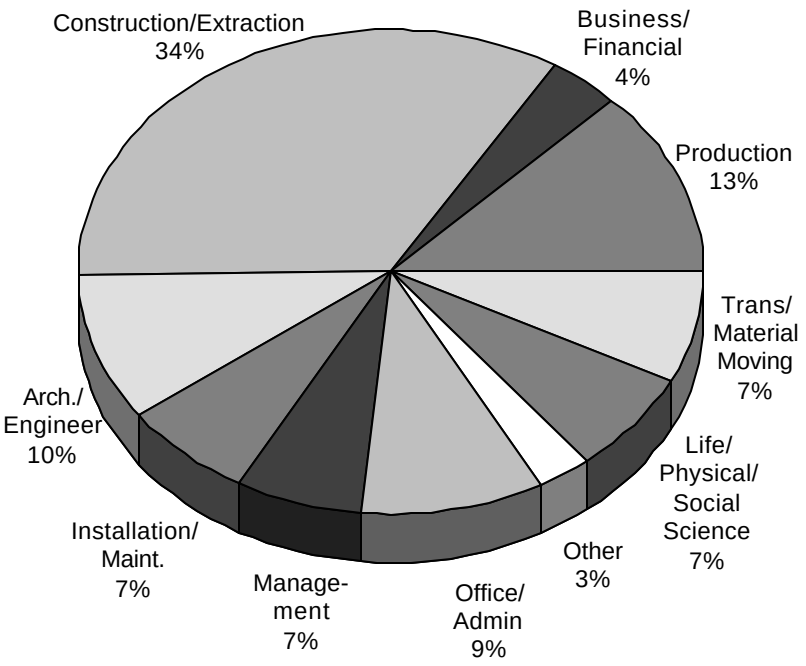
Source: U.S. Department of Labor, Bureau of Labor Statistics

field services or drilling support. Employment at producer firms made up 32 percent of the industry's workforce and the remainder represented employment in firms under contract to the producers.

Staffing patterns in the industry

Although occupational titles and duties may vary from one company to another, most job functions in the industry are similar. Staffing patterns in producer companies do not change as frequently as in oil-service companies. During development phases of new oilfields for example, oil service support firms typically furnish most of the required construction labor. This workforce waxes and wanes with oil field development activity.

11 A Distinct Staffing Pattern
Underlies Alaska oil industry



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

Alaska's oil workers have strong technical backgrounds

Alaska's oil and gas industry occupational mix differs to some degree from that in the oil-producing states in the lower 48. Distribution and marketing play a smaller role in Alaska's workforce than elsewhere because the industry concentrates on exploration and production. This difference means that Alaska's oil workforce tends to have a stronger technical background. The industry's staffing pattern in year 2000 indicates that roughly 80 percent of all employees are in occupations that require technical skills of varying degrees.

The industry's specific occupational mix

The occupational mix in the oil industry changes with the nature of the work being done at the time. The occupational staffing pattern in the following discussion reflects conditions in year 2000, when large oil development projects such as Alpine and Northstar were under way.

The sorting of occupations according to the Standard Occupational Classification system revealed that construction and extraction related jobs formed the largest group, (34 percent) in the oil industry. (See Exhibit 11.) Roustabouts, operating engineers and construction equipment operators were the most frequently occurring occupations.

Production occupations formed the second largest work group, claiming 13 percent of all jobs. Within this group the highly specialized occupation of petroleum pump system operator was the most numerous. Welders were the second largest production occupation.

Architecture and engineering occupations made up the third largest group with 10 percent of all occupations. This group included several engineering specialties with petroleum engineers the largest. Drafters, engineering and mapping technicians were included in the second most prevalent occupation group.

Office support and administrative jobs formed a nine percent share of the industry's workforce. The three most common occupations were secretaries, office clerks, and human resource assistants.

Among transportation and material moving personnel, who claimed seven percent of all jobs, the occupation of pump operator dominated. Installation, maintenance and repair jobs accounted for an additional seven percent. Within this group, general maintenance and repair workers and industrial machine mechanics were the two most frequent job titles. Life, physical, and social science occupations were also represented with a seven percent share. Geological & petroleum technicians were the most frequent of this group.

Management consisted of a diversified team with a seven percent share of the industry's workforce. While nearly 60 percent of leadership positions were closely linked to a professional field, 40 percent were classified as general managers.

The remainder of the occupational mix attributes four percent to business and financial functions and three percent to other functions. Industry business and financial occupations list jobs such as cost estimators, accountants, and purchasing agents. The "other" category includes computer specialists, legal professionals, communications specialists, sales personnel, and health care practitioners. Among them, occupational health & safety specialists & technicians formed the largest occupation.

Education and training

The oil industry workforce is a well educated and experienced labor pool. More than 20 percent of its workers have jobs that require bachelor degrees or higher, often combined with additional experience. Petroleum engineers, other engineers, and geo-scientists and their managers form the largest professional and managerial categories that require a bachelor degree and higher.

Nearly 12 percent of all occupations require associate or other post-secondary vocational degrees. Petroleum and engineering technicians and drafters usually have associate degrees, and many craftsmen were trained in post-secondary vocational institutes, graduating with certificates in their specialized trade. Among the crafts represented in the oil industry that require vocational training, welders are the most widespread.

Work experience is important in the industry and 26 percent of the positions require long term training. Most first-line supervisors had long term on-the-job training in their specialty and were promoted through the ranks. Other tradesmen such as plumbers, electricians, and other maintenance workers also attain expertise in their trade at work over a long period of time.

Operating engineers & other construction equipment operators and roustabouts hold positions that can be learned in special schools and on the job. Medium term training of more than four weeks but less than a year is required. In the oil industry 32 percent of all jobs require medium term on-the-job training.

Only 10 percent of all jobs in the oil industry can be learned on the job in four weeks or less. Laborers and freight and material movers, office clerks, and human resource assistants are jobs that belong in this category.

According to a 2002 worker age analysis, the average age for workers in Alaska's oil and gas extraction companies was 41.1. Among Alaska's private sector industries this average age ranked as the ninth oldest. Oil and gas workers were five years older than the average employee in the private sector.

Conclusion

Oil has played a fundamental role in Alaska's economy since before statehood. Despite significant changes over the years, including major

shifts in production levels and industry restructuring and consolidation, the one constant has been oil's dominant economic influence on the state. Revenue from oil industry taxes is essential to both state and local governments and oil jobs command some of the state's highest salaries.

More change for the industry can be expected in the coming years. Oil industry employment levels and workforce skill requirements will fluctuate as the industry develops new projects and technologies. Oil field production, which has declined steadily over the past decade, is difficult to predict, but the potential for development is strong, whether through drilling in the National Petroleum Reserve-Alaska, the opening of the Arctic National Wildlife Refuge, the construction of a gas pipeline, or the development of new oil finds in mature basins. The extent to which this potential is realized will have a lot to do with Alaska's economic future.

Note: The companies listed in Exhibit 1 are all engaged primarily in the oil industry, although they may also employ workers in other industries. The employment numbers listed show the companies' total employment, and not just that part strictly defined as being in the oil industry. In other words, a portion of VECO's employment of 1,127 may be classified under another industry.

Exhibits 4 and 7, on the other hand, display only the employment of these and other companies that are classified as part of the oil industry. Therefore, Exhibit 1 should not be compared to Exhibits 4 and 7. For example, it would be incorrect to say that VECO represents 13 percent of all oil industry employment (VECO total empoyment of 1,127 from Exhibit 1 divided by total oil industry employment of 8,800 from Exhibit 4.)