

Working in the Oil and Gas Industry

By James Wilson

The oil and gas industry is currently the keystone of Alaska's economy. This is, however, a relatively new natural resource activity in the state. The large scale development of the oil industry began less than twenty years ago with the North Slope oil lease sale in 1969. Although a prime mover of economic activity, the oil and gas industry directly employs fewer than 10,000 workers, or roughly 6% of private sector employment. Employment levels in other industries such as government, construction, trade, and services are very much dependent upon the economic stimulus from oil generated revenues and taxes.

Most discussions of the oil and gas industry center on the extraction of the resource, which is the major part of the oil activity. Other economic components of the bigger picture include: the Trans-Alaska Pipeline System including the storage and tanker loading facilities at Valdez, refineries, and finished product bulk storage and distribution systems.

Employment Levels in Oil and Gas

The oil and gas extraction industry is comprised of two primary components, 1) production, and 2) oil and gas field services (which include exploration and drilling). Currently 55% of the annual average employment is in the production segment and 45% is in the field services portion. Field services work is more seasonal than production activity and annual employment levels are more variable than in production. Table 1 lists occupations in mining for 1986 and forecasted occupations for 1991. (Oil and gas make up over 90% of these occupations)

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Table 1
Occupational Employment for Mining

OES Occupation Title	1986 Employment	1991 Employment	Percent of 1986 Total Industry Employment
OFFICERS AND MANAGERS	599	600	6.40
General Managers & Top Executives	185	180	1.98
Mining, Quarrying & Oil/Gas Well Managers	136	144	1.45
All Other Managers & Administrators	278	276	2.97
PROFESSIONAL AND TECHNICAL WORKERS	2,626	2,625	28.07
Accountants & Auditors	240	234	2.57
Civil Engineers	142	136	1.52
Drafters	98	99	1.05
Electrical/Electronic Engineering Technicians	84	81	0.90
Geologists/Geophysicists/Oceanographers	352	408	3.76
Mechanical Engineers	116	111	1.24
Operations/Sys Researchers, Except Computer	312	298	3.34
Personnel/Training/Labor Rel Specialists	100	102	1.07
Petroleum Engineers	261	250	2.79
All Other Engineering Technicians/Technologists	166	160	1.77
All Other Engineers	146	145	1.56
All Other professional & technical workers	609	601	6.50
SALESPEOPLE	50	54	0.53
CLERICAL WORKERS	944	975	10.09
Bookkeeping, Acctg, & Auditing Clerks	81	104	0.87
General Office Clerks	145	141	1.55
Secretaries	335	344	3.58
Supervisors/Managers: Clerical/Administrative Support	76	77	0.81
SERVICE WORKERS	150	168	1.60
CRAFTS, OPERATORS, LABORERS	4,985	5,029	53.29
Blasters/Explosives Workers	72	70	0.77
Carpenters	57	54	0.61
Derrick Operators: Oil & Gas Extraction	114	109	1.22
Electricians	41	39	0.44
Helpers: All Other Construction Trades	193	212	2.06
Maintenance Repairers: General Utility	117	131	1.25
Mechanics: Mobile Heavy Equip, Except Engine	157	159	1.68
Operating Engineers	413	397	4.42
Rotary Drill Operators: Oil/Gas Extract	287	275	3.07
Roustabouts	590	565	6.31
Service Unit Operators	163	156	1.74
Supervisors: Construc/Extractive Workers	276	282	2.95
Truck Drivers: Heavy or Tractor Trailer	110	107	1.18
Welders & Cutters	76	82	0.81
Well Head Pumpers	91	87	0.97
All Other Extractive Workers, Except Helpers	563	546	6.02
All Other Helpers/Laborers/Material Movers: Hand	696	666	7.44
All Other Machinery Maintenance Mechanic	119	123	1.27
All Other Supervisors: Production/Construction/Maintenance	130	125	1.39

Beginning in the early 1970s employment in oil and gas extraction grew rapidly. Annual average employment peaked at roughly 8,800 in 1985. With the collapse of oil prices in 1986, employment dropped by 4% from the 1985 level. Oil industry employment levels during 1986 and early 1987 were somewhat insulated from the oil price drop. Alaska's oil and gas producing companies are large corporations which had the ability to weather the crisis. Employment is expected to be stable during 1987 with slight increases predicted during the later part of the year.

Working Conditions

Work can be challenging for those workers who are at drilling sites. The majority of drilling sites are in remote areas, which often require workers to spend several weeks or more of consecutive time away from home. Alaska has both onshore and offshore drilling rigs. All types of weather are encountered, especially extreme cold temperatures which sometime drop to -50 degrees during the winter months. Physical strength and stamina are required of workers. Tools used are often oily and dirty. The work may

include night shifts and holidays since rigs operate 24 hours a day. Work shifts on oil rigs are usually 12 hours a day for seven or 14 consecutive days followed by seven days off.

Petroleum processing workers operate the refineries which manufacture crude oil into useful products such as gasoline and other fuels. The work may be either inside or outside depending on the job duty. Outdoor work would be in Alaska's harsh weather conditions while the indoor duties may involve some work in hot places. Since most plants have con-

tinuous production, swing shifts and weekend work are common.

Hiring Practices

Most people begin working in the petroleum industry as petroleum helpers. These workers are more frequently known as roustabouts or laborers and perform a wide variety of oil field tasks. Helpers whose duties are performed on a drilling rig are called roughnecks, drillers helpers, or rotary floor workers. Employers prefer applicants with previous oil field or mechanical repair experience. There are an estimated 1,250 petroleum helpers employed in Alaska.

After several seasons of experience roustabouts and roughnecks can advance to become derrick operators or rotary drillers. Some employers feel that a mechanical background is important for rotary drillers to successfully diagnose underground conditions from sound, feel, and surface conditions. There are an estimated 430 rotary drillers employed in Alaska. Roughly 425 people work as derrick operators, service unit operators, well head pumpers, hoist and winch operators, and pump operators.

According to the Alaska Career Information System about 70 production workers are employed in Alaska's refineries. Most production workers enter as laborers. Other openings are filled by in-plant promotions based on seniority and ability.

The occupations featured in this discussion are unique to the oil industry and account for roughly 10% of the industries workers. It should be recognized that the majority of people in the oil and gas industry work in a wide variety of other managerial, technical clerical, and craft occupations (Table 1).

Wages

The oil and gas extraction industry paid 13% of all private sector wages in 1986, but it contains only 6% of the private work force. This industry has the highest average monthly wage in Alaska (\$5,398 vs. \$2,221 for the private sector). The average monthly wage is higher in oil production (\$6,160) than in field services (\$4,484). People who work in oil and gas earn more than in other private

sector industries because of some of the demanding jobs that involve long hours under harsh conditions. Workers in the oil industry in administrative and support jobs receive wages more comparable to similar jobs in other industries.

Petroleum helpers earn an average wage of approximately \$14.50 per hour to start and up to \$17.00 per hour with experience. Rotary drillers earn roughly \$14-\$20 per hour while derrick operators make between \$18-\$22 per hour.

Job Opportunities

The forecast of occupational employment for 1991 reveals that there will be no appreciable growth in numbers of jobs. Many occupations will have fewer people. Job openings will basically be due to turnover. This lack of occupational employment growth is not just due to the current difficulty with the price of oil but also because production of Alaska oil is expected to decline during the 1990s. There is currently an extreme surplus of applicants for entry level oil and gas jobs, and a moderate surplus of workers for jobs requiring experience.

Worker Injury Rates

The incidence rate for total injury and illness cases in the private sector in 1985 was 10.7 cases per 100 full time equivalent workers while the rate in Oil and Gas was 9.7 cases per 100 workers. Incidence rates of time loss cases (versus total injury and illness cases) for the two components of oil and gas extraction differ greatly. The oil production industry has one of the lowest time loss cases of any industry in Alaska, 0.7 cases per 100 workers.

In contrast, the oil and gas field services industry time loss case rate was 7.9 cases per 100 workers. Within the field services industry a few occupations account for a majority of time loss cases. Roustabouts (an estimated 590 workers) reported 133 of the 375 time loss cases in field services during 1986. While the oil and gas industry has an incidence rate lower than the state average a few occupations within the industry have a higher than average risk of injury.

The oil and gas industry is one of a

few industries in which back injuries are not the dominant kind of injury. Instead the lower extremities are the parts of the body most frequently injured. Oil and gas has a high ratio of fractures. Historical data show that the oil and gas industry has a high proportion of time loss cases occurring after the eighth work hour of the shift. This is from the long shifts worked in the field services and shows that worker fatigue figures significantly in the occurrence of injuries.

Worker Occupational Health

Crude oil is a mixture of complex organic compounds. In all stages of the extraction, manufacture, and transportation of oil and its derivative products proper precautions must be taken to minimize exposure to compounds known to cause illness and disease. Exposure to different substances can occur through skin contact or inhalation of vapors in the work environment. The oil industry provides training, protective clothing and respirators, and establishes procedures for workers to follow.

Hydrogen sulfide is an oil contaminant that may be present in the crude product which can cause respiratory arrest. Fortunately the industry has had long experience with this problem and how to take proper precautions.

Substances which are not components of oil or its derivatives also require proper handling by workers in the oil industry. These include special polyurethane and epoxy paints, used for pipes, and asbestos, which was used in the past as a pipe insulator but more likely now to be found in gaskets. Carbon monoxide can be a concern when workers are using air respirators.

Maintenance workers are most at risk to exposure to potential illness causing substances. Exposure occurs when closed systems are opened up or and when storage facilities are cleaned and maintained.

Occupational health will continue to be an issue, even though the oil and gas industry has a good safety and health record, because of the interest in long term health effects of working with complex chemical substances.

Conclusion

The oil and gas industry drives the economy in Alaska. Although the oil and gas industry directly employs only 6% of the private workforce its impact on employment levels in other industries is profound. Workers in oil and gas, particularly those involved in the actual drilling and extraction earn rates of pay well above the average for private industry. The high rates of pay, however, go hand in hand with work-

ing under extreme conditions for long hours at remote locations. The industry has a worker injury rate below the state average but there are environmental health factors for some oil workers which are not present in other industries. Job availability in the future will depend upon turnover, as oil production is expected to decline in future years. Competition for jobs in the oil and gas industry will be high, especially for entry level work.