

## Alaska's Oil Patch

By Greg Huff

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**A**laska is a giant among U.S. oil producing states. The daily rate of oil production from Alaska accounts for about 21.2% of the U.S. daily production. Most impressive is that this production level comes from a small number of oil fields. Although there are 26 known sedimentary basins in Alaska only two—the North Slope and Cook Inlet—produce commercial quantities of oil.

Prior to 1977, Cook Inlet oil represented all of Alaska's commercial oil production. Today the North Slope fields account for about 97% of Alaska's oil production. As of mid-1987 oil production from the North Slope was from three oil fields: Prudhoe Bay, Kuparuk and Lisburne. Production from these three fields has increased Alaska's annual oil production ten fold since 1977, to over 670 million barrels a year.

Table 1  
Alaska Oil Industry Employment

Industry	1980	1981 <sup>1</sup>	1982 <sup>1</sup>	1983	1984	1985	1986
Producers	3,312	3,156	3,549	4,057	4,515	4,748	4,639
Drilling	991	1,493	1,245	815	841	1,175	1,171
Exploration (seismic)	751	1,447	1,615	930	710	673	340
Oil Field Services	1,100	2,020	1,676	1,641	1,983	2,274	2,359
Total	6,153	8,116	8,084	7,442	8,049	8,869	8,508

### Oil Industry Indicators

Number of oil rigs	14	23	22	14	14	20	13
Exploration (crew months)	37	82	129	58	79	48	19
Production (million bbl)	591.7	587.3	618.9	625.5	630.4	666.2	681.3

Sources: Employment data: Alaska Department of Labor, ES-202 data 1980-1986.

Oil industry indicators: Petroleum Independent

<sup>1</sup> ES-202 figures were adjusted for coding errors.

Each stage in the development of the North Slope oil fields has resulted in more oil and gas jobs in Alaska, though there have been intermittent periods where employment has fallen. Over the last decade, Alaska's oil and gas employment has grown nearly three fold, peaking in 1985 at 8,869 jobs. Although employment fell in 1986 the industry still accounted for 4% of the total jobs and 9% of total wage and salary payroll in Alaska.

### Alaska's Oil Employment 1980-1987

From 1980 through 1982 Alaska oil patch employment grew rapidly (Figure 1). This growth in employment was brought on by \$30 a barrel oil prices and major development projects in the Prudhoe Bay and Kuparuk fields. Employment cut-backs followed in 1983 with reduced drilling and seismic exploration schedules. In 1984 another period of employment expansion began with rounds of additional development in the Prudhoe Bay Field directed at maintaining the daily production rate of 1.5 million barrels and extending the production life of the field. Concurrently, additional development was being done in the Kuparuk field.

Projects at both fields caused drilling schedules to increase, gravel pads and pipelines to be built, and production and enhanced recovery facilities to be constructed and staffed. This period of growth lasted until 1986 when the collapse of oil prices caused a critical reassessment of planned development activities. Oil and gas exploration activities were delayed or altered, idling equipment and crews.

An example of a marginal field that was shut down by low oil prices is the Milne Point oil field. Milne Point started producing in late 1985 but shut down in the summer of 1986. On the other hand, the Lisburne field, considered marginal, began commercial production in December 1986. In addition, Standard Alaska Production Company brought the Endicott Oil field into operation in October, so there was some positive news despite the gloomy scenario caused by falling oil prices.

After all the dust settled, less than 400 oil and gas jobs had been lost by the end of 1986; not that bad con-

Figure 1  
Alaska Oil and Gas Employment 1980 to mid 1987

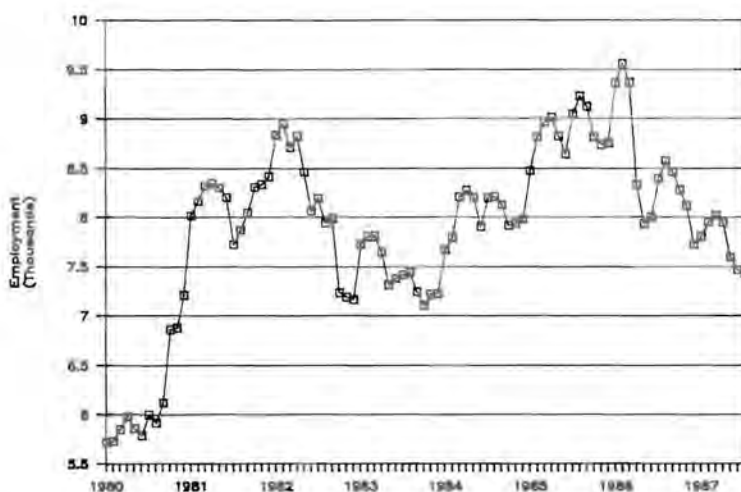
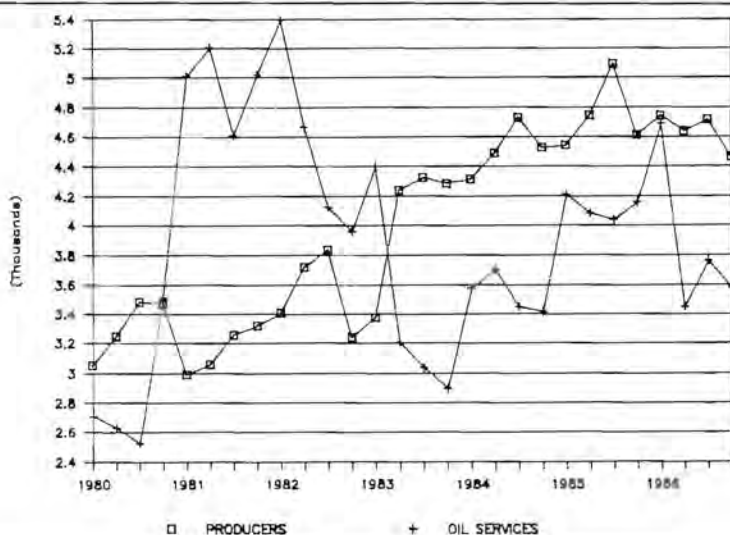


Figure 2  
Alaska Oil and Gas Employment—Producers and Services



sidering the free fall of oil prices. By the end of 1986 oil prices began to climb and by 1987 oil prices had returned to levels that were comparable to those prior to the crash. However, oil and gas employment continued to fall as drilling and exploration schedules were further reduced, but the worst appear to be over as some industry indicators are improving.

### Production Employment

Each stage of development has a different impact on employment levels of the various segments of the oil industry (Figure 2). The two primary segments are oil and gas production and oil field services. The oil and gas production segments includes the primary operators of the oil fields such as ARCO and Standard Alaska Production Company. This segment employs workers to operate production facilities and to support and/or manage the operations in the field.

The oil field services segment includes firms which provide contract services to the primary operators. These services includes drilling, exploration services and miscellaneous oil field services.

Employment in the production segment grew each year from 1980-1985, because of the ongoing development of the North Slope oil fields. Cook Inlet production employment was fairly stable over the period. Company reorganization and layoffs caused by the 1986 drop in oil prices halted growth in production employment. The layoffs and reorganizations ultimately caused production employment to fall by 100 jobs.

### Field Service Employment

Employment in the oil field service segment have fluctuated widely over the years (Figure 2). Employment in oil field services peaked in 1982 then fell sharply through late 1983. Although there was a growth period beginning in late 1984, employment never regained the levels reached in the early 1980s. In general, as the North Slope fields mature the demand for exploration and drilling services declines.

A further breakout of the oil field services segment is helpful in understanding its underlying employment trends. The three sectors which make

up the oil field services component are drilling, exploration, and miscellaneous oil fields services. They all provide oil and gas services on a contract basis to the primary producers.

The drilling services sector contains establishments that specialize in directional drilling, spudding in wells, and re-drilling or reworking wells. Exploration service firms provide geophysical and geological services including seismic testing. The miscellaneous oil field services category is a catch all for firms providing any other type of oil field services, such as building foundations at well locations, cementing wells, or chemically treating wells.

Of the three sectors the exploration services tends to be the most sensitive to oil prices. Both exploration and drilling are utilized extensively during early phases of oil field development. The miscellaneous component is influenced more by facility construction, production schedules, and oil field maintenance.

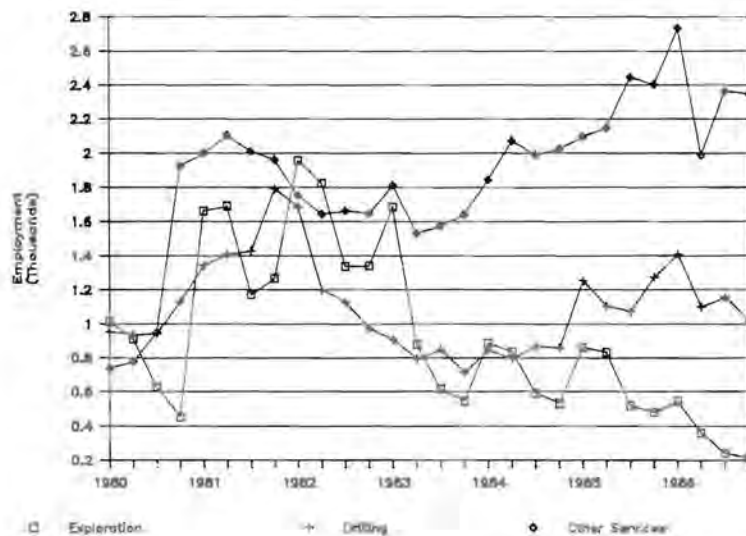
The drilling and exploration sectors have similar trends through 1983. Employment grew rapidly during the early development stages of Prudhoe and Kuparuk fields, but fell quickly in 1983 (Figure 3). Drilling and exploration employment trends separated in 1984 as enhanced recovery techniques on existing fields and the development of the marginal fields increased the demand for drilling services. In fact, drilling employment levels during the first quarter of 1986 were the highest since 1982.

### 1986 and Beyond

The oil industry cutbacks were the greatest in exploration activities after the collapse in oil prices. For example, exploration activity, measured in terms of crew months, dropped over 60% in 1986 in Alaska. The figures for 1987 are preliminary, but indications are that exploration activities are slowly recovering as oil companies concentrate on further development of the existing producing fields and initial development of other known fields.

Next hardest hit by falling oil prices was drilling services. Drilling schedules were dramatically cut back resulting in the number of rigs work-

Figure 3  
Alaska Oil and Gas Employment—Oil Field Services



ing in the state falling from 22 in February 1986 to 6 by December 1986. Drilling employment fell from 1,434 to 965 over the same period.

The number of rigs operating in Alaska from December 1986 through July 1987 fluctuated between 6 and 9. Rig activity is expected to increase through the rest of 1987 and into 1988 as further North Slope development occurs. Among the additional drilling activities expected are enhanced recovery techniques at Prudhoe Bay and Kuparuk fields, the increase in production at the Lisburne field and the soon to be producing Endicott field.

### Conclusion

Since the development of the North Slope oil fields Alaska has become an oil giant among the U.S oil produc-

ing states. Alaska's oil production has increased ten fold in the past ten years while oil and gas employment has grown nearly three times. In 1986 the industry represented 4% of all jobs and 9% (\$551 million) of total payroll in Alaska.

Besides direct employment the oil industry provides a limited secondary impact on employment in Alaska largely limited to expenditures of employees' payroll and the construction associated with the development of oil fields. Nearly all manufacturing and assembly of equipment used in the oil industry is done outside Alaska so economic impacts from that sector are small.

The oil industry is made up of several segments, each of which reacts differently to exploration and development schedules, which in turn

are shaped by the level of and change in oil prices. Overall the production and miscellaneous oil field services segments have had employment increases from 1980 to 1985, and only small employment declines in 1986.

Employment levels in drilling and exploration services, on the other hand, have fluctuated up and down over the period depending upon exploration and development schedules, peaking during the early development stages of the Prudhoe Bay and Kuparuk fields.

Alaska's oil patch, like other oil patch states around the world, had major setbacks in 1986 but if oil prices remain at current levels Alaska's oil patch will recover and the state's economy will improve with it.