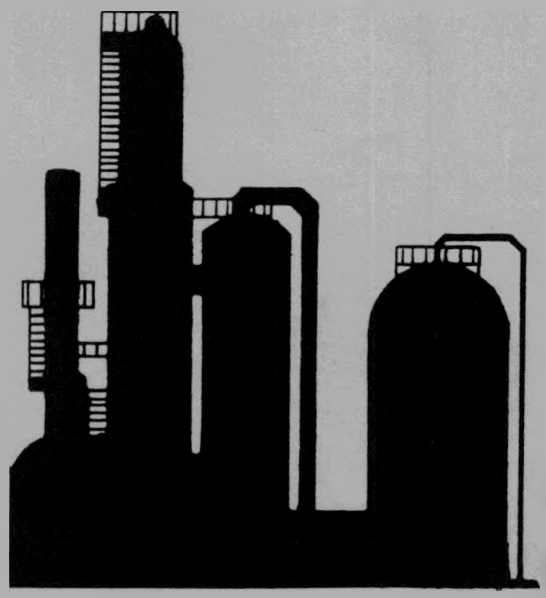
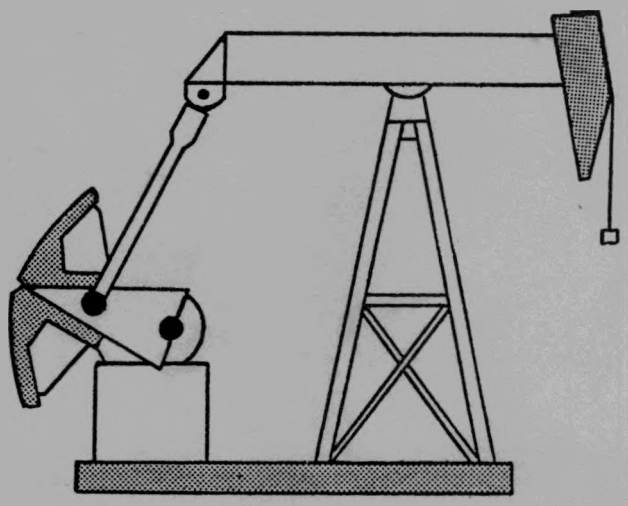
WYOMING

OIL AND NATURAL GAS EXTRACTION AND REFINING INDUSTRIES





a wage & employment survey 1982

Published by
WYOMING DEPARTMENT OF LABOR & STATISTICS
HATHAWAY BUILDING
CHEYENNE, WYOMING 82002

PREFACE

The Wyoming Department of Labor and Statistics is charged by statute to collect data on the industrial and economic conditions of Wyoming's labor force. The Department's wage and employment survey series partially fulfills that requirement by gathering information on the number of workers by occupation, skill level, and sex; the average straight-time hourly wages; the number and percent of workers covered by a collective bargaining agreement; and company paid fringe benefits plus additional statistics, as needed, for selected State industries. The series focuses on industries which are either directly involved with or impacted by energy development. The detailed information contained in the final reports is not found in any other State publication; thus, the series has enjoyed wide usage as a planning aid for individuals and companies, alike.

Recently, the Department surveyed the Wyoming crude petroleum and natural gas extraction industry and the oil refinery industry. The results, published herein, update the statistics contained in previous Department publications. The author wishes to extend a generous expression of gratitude to the participating companies whose comprehensive and timely responses made this publication possible. Wage and employment data concerning individual firms are confidential and will not be released under any circumstances.

Louis E. Wessel

Cheyenne, Wyoming
April 1983

Blank Page

TABLE OF CONTENTS

PURPOSE

The Wyoming Department of Labor and Statistics simultaneously initiated wage and employment surveys of the State's crude petroleum and natural gas extraction and the oil refinery industries during the fourth quarter of 1982. The studies were designed to update the statistics obtained in the 1980 survey of the two industries. Specifically, data were collected to:

1. Estimate the number of workers in selected occupational categories
2. Determine the average straight-time hourly wage in each occupational category
3. Estimate the percent of workers covered by a collective bargaining agreement in each occupational category
4. Review the employer contributions to employee fringe benefit programs.

SCOPE

Only firms working in Wyoming under the Standard Industrial Classification 2911 (oil refineries) were included in the refinery survey. Each of the 14 qualifying companies was mailed a questionnaire requesting detailed data for 25 specific occupational categories. All 14 firms responded to the questionnaire; however, five of the 14 refineries had suspended operations and did not have any employees.

The survey of the crude petroleum and natural gas extraction industry covered all establishments designated as Standard Industrial Classification (SIC) 1311, oil and natural gas field production; SIC 1381, drilling oil and natural gas wells; and SIC 1389, oil and natural gas field services. A total of 649 establishments operating in Wyoming met the foregoing criteria, and, based on a probability proportional to size sampling scheme

within each SIC, 219 firms were mailed a questionnaire. One hundred and sixty-three companies responded with detailed wage and employment data for the 30 surveyed occupations.

All surveyed oil and natural gas extraction and refinery companies were asked to furnish the number of workers by sex, straight-time hourly wages, and the number of workers covered by a collective bargaining agreement for each of the occupational categories. It must be emphasized that the surveyed occupational titles are general in scope, and that the actual job descriptions may vary from firm to firm. Also, clerical, managerial, and other salaried personnel were not included within the scope of this survey.

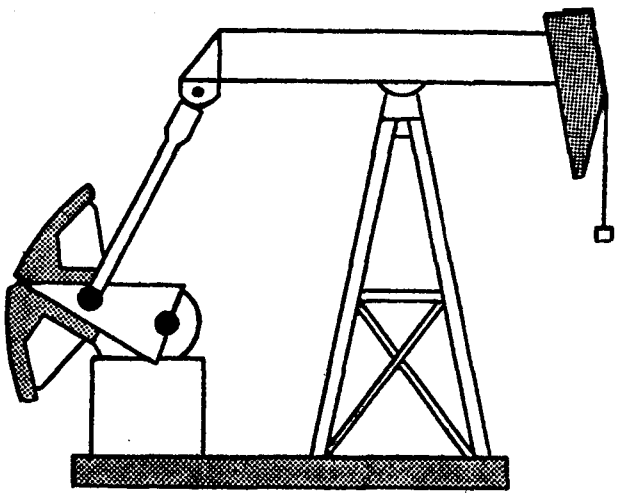
SUMMARY OF RESULTS

A brief summary of total employment, average straight-time hourly wages, and the percent of employment covered by a collective bargaining agreement is exhibited below for oil refinery and crude petroleum and natural gas extraction workers except those in clerical, managerial, and other salaried positions.

	Oil Refinery	Oil and Natural Gas Extraction (Sample Estimates)
Number of Workers	651	11,653
Average Straight-time Hourly Wage	$12.63	$10.50
Percent of Workers Under Union Contract	87.9%	1.1%

A detailed analysis of the results of each survey follows, first for the oil and natural gas extraction industry, then the refinery industry. An appendix containing a brief discussion of the statistical procedures and a listing of the occupational titles and descriptions used in the surveys completes this report.

OIL AND NATURAL GAS EXTRACTION INDUSTRY



5/6

BACKGROUND

For many years, Wyoming has ranked among the top six states in total production of crude petroleum and lease condensates and among the top seven states in total marketed production of natural gas. Comparison of Wyoming versus United States production for the past ten years, displayed below, shows the State averaging 4.1 percent of the national crude petroleum and lease condensate production. That is slightly higher than the 3.8 percent of the total historical U.S. crude petroleum and lease condensate production that Wyoming generated over the period from 1859 through 1982. Thus, Wyoming has increased its share of the national crude production in recent years.

WYOMING VERSUS UNITED STATES PRODUCTION
OF CRUDE PETROLEUM AND LEASE CONDENSATES

	Thousands of Barrels per Day										Total*
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1859-1982
Total U.S. Production	9208	8764	8362	8119	8179	8701	8553	8597	8572	8655	130,327,529
Total Wyo. Production	389	386	349	319	306	376	361	345	358	333	4,937,348
Wyo's Share (Percent)	4.2	4.4	4.2	3.9	3.7	4.3	4.2	4.0	4.2	3.8	3.8

*Thousands of barrels

Although cumulative figures for marketed production of natural gas are not readily available for a complete historical comparison between Wyoming and the United States, the ten year comparison shown on top of the next page, reveals a sharp increase in Wyoming's share of marketed production of natural gas. In fact, the State has jumped from the seventh largest

producer of natural gas in 1976 to fifth in 1982, moving past California and Kansas. New gas wells and gas processing plants in southwestern Wyoming can be credited with much of the State's increase in marketed production of natural gas.

WYOMING VERSUS UNITED STATES PRODUCTION
OF MARKETED NATURAL GAS

	Million Cubic Feet per Day									
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Total U.S. Production	62048	59180	55092	54515	54863	54723	56086	55832	55282	51644
Total Wyo. Production	980	895	866	898	905	979	1,135	1,122	1,503	1,255
Wyo's Share (Percent)	1.6	1.5	1.6	1.7	1.6	1.8	2.0	2.0	2.7	2.4

Recent discoveries have added more than 300 million barrels of oil to Wyoming's inventory of proven reserves since 1978. Of particular importance to the State, has been the discovery of three new giant oil fields (fields proven to contain more than 100 million barrels of recoverable oil): Hartzog Draw, Painter Reservoir, and Whitney Canyon-Carter Creek. Those additions have raised the number of known giant oil fields in Wyoming to 14, though several are old fields which are nearing depletion (see table on the next page).

Based upon data supplied by the U.S. Geological Survey and the Wyoming Geological Survey, Wyoming has estimated undiscovered recoverable resources of 10.6 billion barrels of oil and 68.3 trillion cubic feet of natural gas. The map on page 10 displays the State's major drilling basins and the associated, estimated undiscovered resource for each basin. Also shown are the known giant oil fields within the basins.

WYOMING'S GIANT OIL FIELDS

Field Name	Discovery Date	Thousands of Barrels			Estimated Number of Wells
		1982 Production	Cumulative Production*	Estimated Remaining Reserves	
Brady	1960	3,500	35,600	67,900	7
Byron	1918	2,050	109,900	17,950	56
Elk Basin (Wyo.-Mont.)	1915	4,600	521,900	45,400	258
Garland	1906	2,400	138,050	9,600	233
Grass Creek	1915	2,800	169,400	23,700	285
Hamilton Dome	1918	3,000	249,000	18,300	264
Hartzog Draw	1976	2,500	34,200	314,500	130
Hilight	1969	1,600	71,400	60,100	120
Lance Creek	1918	200	107,000	600	52
Lost Soldier	1916	3,400	175,270	17,800	82
Oregon Basin	1912	8,100	330,100	71,900	459
Painter Reservoir	1979	3,500	12,500	111,500	36
Salt Creek	1889	5,400	595,600	24,100	1,146
Whitney Canyon-Carter Creek**	1979	404	450	115,000	3

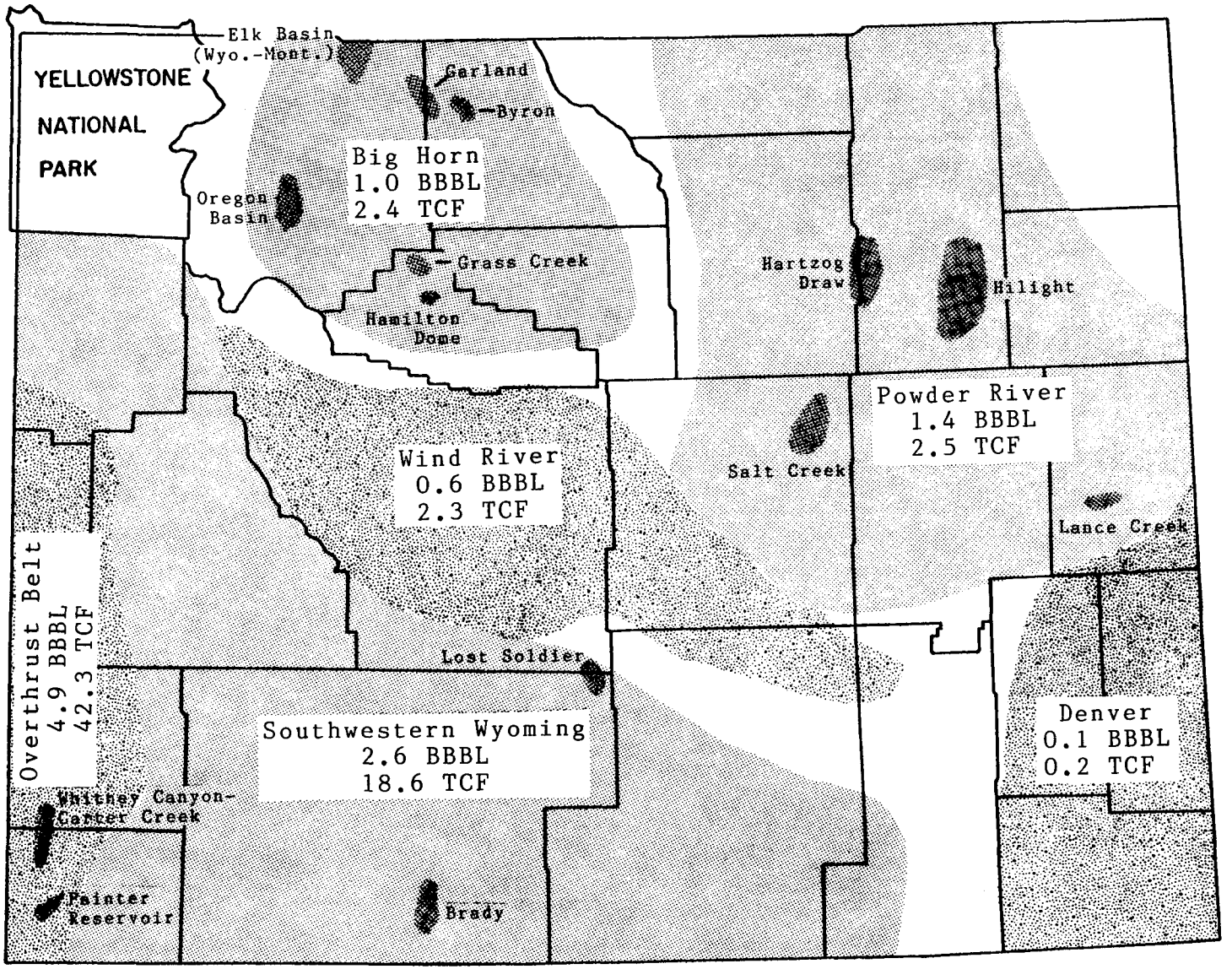
*Total production from discovery through 1982.

**Whitney Canyon-Carter Creek is also a new natural gas giant with more than 1 trillion cubic feet of proven reserves.

Adapted from the Oil & Gas Journal's "OGJ Report" by the Wyoming Department of Labor and Statistics.

Drilling activity in Wyoming has increased sharply since the 1973 Arab oil embargo. Total annual well completions have risen from just 885 in 1973 to a record-breaking 2,160 wells in 1982, according to data compiled by the Oil and Gas Journal. However, the Journal's 1983 forecast for Wyoming predicts only 1,680 well completions, a drop of nearly 500 wells. Recent figures published by the Hughes Tool Company of

WYOMING DRILLING BASINS WITH ESTIMATED UNDISCOVERED RESOURCES AND GIANT OIL FIELDS



BBBL - Billion barrels of oil TCF - Trillion Cubic Feet of Natural Gas

Adapted from U.S. Geological Survey and Wyoming Geological Survey data by the Wyoming Department of Labor and Statistics

Casper, Wyoming and the Wyoming Oil and Gas Conservation Commission hint that the actual number of well completions in 1983 may even be lower. The uncertainty over oil prices and the lack of investment capital have been cited as the main factors which may keep future drilling activity down.

Employment in Wyoming's crude petroleum and natural gas extraction industry has more than tripled since 1973, jumping from 7,200 workers to 23,500 employees in 1982 (see the following table). From 1981 to 1982, the industry's employment grew by only 800 workers--the lowest annual growth since 1976. With the possibility of reduced levels of drilling activity in 1983, the industry's workforce may remain unchanged or decline over the year. Future employment growth will undoubtedly hinge on the price of oil.

ESTIMATED AVERAGE ANNUAL EMPLOYMENT IN WYOMING'S CRUDE PETROLEUM AND NATURAL GAS EXTRACTION INDUSTRY

1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
7,200	9,000	10,300	10,200	11,700	12,900	16,000	17,800	22,700	23,500

Source: Wyoming Employment Security Commission, Wyoming Labor Force Trends, 1973-1982.

SURVEY RESULTS

Utilizing data from the sampled firms, 15,250 employees, composed of 1,040 females and 14,210 males, were estimated in the Wyoming crude petroleum and natural gas extraction industry for the fourth quarter of 1982. The three industry sectors specifically included within the survey were Standard Industrial Classification (SIC) 1311 defined as the removal of oil and natural gas from a completed well; SIC 1381, drilling oil and natural gas wells; and SIC 1389, oil and natural gas field services. For all oil and natural gas extraction employees except those in clerical, managerial, and other salaried positions, a brief summary of the total employment and the average straight-time hourly wages by Standard Industrial Classification and the overall industry is displayed below:

	SIC 1311	SIC 1381	SIC 1389	Combined SIC's
Estimated Number of Workers	2,040	4,138	5,475	11,653
Average Hourly Wage	$12.32	$12.43	$8.37	$10.50

Only 1.1 percent of the total estimated employment was reported as working under a collective bargaining agreement. For that reason, union employment statistics were not tabulated. Additional wage and employment characteristics by occupational category within SIC follow in Tables I through III and in Chart I.

STRAIGHT-TIME HOURLY WAGE AND EMPLOYMENT CHARACTERISTICS FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES

Straight-time hourly wage and employment characteristics for all surveyed Wyoming oil and natural gas extraction industry employees are shown, by occupation, in Table I. Table II displays similar data by Standard Industrial Classification for the three sectors: SIC 1311, SIC 1381, and SIC 1389. For each of the surveyed occupations, the tables give the estimated total number of employees, the estimated number and percent of female employees, the average straight-time hourly wage, the hourly wage range, the median hourly wage, the first and third quartile hourly wages, the average weekly hours, and the average weekly wage. By definition, the median hourly wage represents the wage where exactly half of the employees receive more pay and half receive less. Similarly, the first quartile hourly wage marks the point where 25 percent of the workers receive pay below that wage, and the third quartile hourly wage is the point where 25 percent of the workers receive pay above that wage. The wage range is the lowest and highest hourly wage reported for each occupation, and the average hourly wage is the arithmetic mean of all wages reported in a given occupation. The average weekly hours are the arithmetic mean for the hours of work reported for each employee. The average weekly wage was determined by multiplying the average weekly hours by the average hourly wage using one and one-half the wage rate (the usual overtime rate) for all hours over 40 hours per week.

Of the 15,250 employees working in the oil and natural gas extraction industry in Wyoming during the fourth quarter of 1982, 11,653 were working in occupations specifically included within the scope of this survey. The category, floorman, was the largest surveyed occupation employing an estimated 1,845 workers. The roustabout category was next with 1,305 employees, followed by derrickman with 950 and rotary driller

with 931 employees. Gas tester was the smallest occupational category with just 29 employees.

Female employees accounted for 172 or 1.5 percent of the total surveyed employment. The roustabout occupation employed the largest number of women with 43, followed by laborer with 23, pumper/gauger with 17, and well logger with 16 female employees. The meterman occupation had the largest percentage of female employment with 15.8 percent; well logger was next with 10.5 percent, followed by laborer with 6.8 percent, and warehouseman with 6.0 percent. Several occupational categories reported no female employees.

The average straight-time hourly wage for all surveyed occupations was $10.50 per hour with a wage range extending from a low of $3.50 per hour to a high of $25.00 per hour. Twenty-five percent of all surveyed employees received less than $8.25 per hour, and 25 percent received more that $12.10 per hour. The average workweek for all surveyed employees was 47.3 hours which yielded an average weekly wage of $534.98. Examination of wages within each surveyed occupation revealed no significant difference between male and female wages.

For the oil and gas production occupations listed under Standard Industrial Classification 1311, pumper/gauger was the largest category of employment with 488 of the sector's total 2,040 employees. Gas tester was the smallest occupation with just 29 employees. Fifty-two or 2.5 percent of the SIC 1311 employees were women, with the lease operator and roustabout occupations each employing 13 females. The average weekly wage for all SIC 1311 employees was $540.85 which was determined by multiplying the sector's average hourly wage of $12.32 by the average workweek of 42.6 hours using the normal overtime rate for all hours over 40 hours per week. Production foreman was the highest paid occupation, averaging $16.57

per hour. Roustabout was the lowest paid category, averaging $9.38 in straight-time hourly wages.

Standard Industrial Classification 1381, drilling operations, averaged $12.43 in straight-time hourly wages and employed a total of 4,138 workers, of which 12 were women. The floorman occupation was the sector's largest category with a total of 1,341 workers, including six female employees. The drilling occupation, tool pusher, was the highest paid of the surveyed categories in both the SIC 1381 and the overall industry, averaging $19.79 per hour in straight-time wages. Rotary driller was the second highest paid position among the SIC 1381 occupations with $15.15 per hour; laborer was the lowest paid category with $8.29 in straight-time hourly wages. All surveyed SIC 1381 occupations averaged $571.78 in weekly wages based on an average 44 hour workweek.

Standard Industrial Classification 1389, field services, was the largest of the three surveyed sectors, employing 5,475 workers which consisted of 5,367 males and 108 females. Roustabout was the sector's largest employment category with 956 workers, including 30 women. The position titled "miscellaneous service operator", a composite of more than 25 miscellaneous titles including: directional driller, drill collar operator, drill collar inspector, casing crew, pipe threader, pipe racker, lay-down machine operator, tong operator, fishing tool technician, carpenter, and painter, was the second largest category employing 728 workers. Warehouseman was the smallest surveyed occupation with only 19 employees.

Standard Industrial Classification 1389 had the lowest average hourly wage of the three sectors surveyed with $8.37 per hour; however, the sector also had the longest average workweek at 51.2 hours. Thus, the average weekly wage of $475.42 was only slightly lower than the weekly wage for the other sectors. The highest average hourly wage among the

SIC 1389 occupations was $13.42 for the tool pusher category. Bulk materials operator was the lowest paid position in both the field services sector and the overall industry, averaging only $5.62 per hour in average straight-time hourly wages.

TABLE 1
STRAIGHT-TIME HOURLY WAGE AND EMPLOYMENT CHARACTERISTICS
FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES
1982

Occupational Category	Estimated Total Number of Workers	Estimated Number of Female Workers	Estimated Percent Female	Average Hourly Wage	Wage Range (Low-High)	Median Hourly Wage	First Quartile Wage	Third Quartile Wage	Average Weekly Hours	Average Weekly Wage
Tool Pusher	505	0	0.0%	$17.32	$ 7.50-24.50	$18.76	$14.32	$20.19	48.4	$911.03
Rotary Driller	931	1	0.1	14.19	7.50-16.85	15.10	13.50	15.60	46.6	708.08
Derrickman	950	0	0.0	11.22	7.00-13.48	12.10	10.01	12.33	47.2	569.98
Motorman	742	3	0.4	11.12	8.91-12.47	11.20	11.10	11.50	43.5	503.13
Floorman	1,845	6	0.3	10.09	6.50-12.08	10.60	9.25	10.87	47.8	534.87
Roustabout	1,305	43	3.3	7.48	5.50-12.51	7.00	6.75	7.80	45.5	360.91
Production Foreman	385	0	0.0	16.57	8.96-22.12	15.76	15.76	18.95	44.5	774.65
Gas Plant Operator	197	4	2.0	12.42	8.50-12.94	12.45	12.45	12.45	40.6	507.98
Lease Operator	281	13	4.6	12.21	10.42-13.25	12.17	12.02	12.35	40.1	490.23
Pumper/Gauger	570	17	3.0	11.40	6.00-13.75	11.89	10.93	12.03	44.4	531.24
Gas Tester	29	0	0.0	10.40	8.42-14.25	9.07	9.07	13.01	46.8	522.08
Meterman	38	6	15.8	11.78	6.83-13.22	11.90	11.90	12.67	40.8	485.34
Clean Out Driller	91	0	0.0	8.78	7.50-11.50	8.63	8.00	8.63	47.1	444.71
Clean Out Driller Helper	140	0	0.0	8.19	6.50-10.50	7.50	7.00	9.00	50.8	460.28
Well Puller	261	0	0.0	9.21	8.50-12.26	9.03	8.75	9.50	59.8	641.94
Service Rig Operator	61	0	0.0	10.07	7.75-13.42	10.13	10.13	10.55	47.7	519.11
Perforator Operator	87	0	0.0	8.98	6.40-10.00	8.50	8.50	10.00	56.4	580.11
Well Logger	152	16	10.5	6.58	4.04-10.50	7.50	4.04	7.50	44.0	302.68
Acid, Cement, Fracture, and Nitrogen Equipment Operator	291	1	0.3	7.82	6.00-11.80	7.18	7.58	7.59	55.2	491.10
Acid, Cement, Fracture, and Nitrogen Equipment Op.Helper	266	11	4.1	6.95	5.00-8.90	6.24	6.24	8.88	53.1	411.59
Bulk Materials Operator	167	4	2.4	5.62	3.50-7.50	5.50	5.50	5.97	54.0	342.82
Misc. Service Equipment Op.	728	7	1.0	9.65	4.37-17.00	9.50	8.67	10.00	47.6	496.01
Truck Driver	391	2	0.5	8.21	5.00-12.78	8.20	7.29	8.80	49.6	446.62
Backhoe Operator	51	0	0.0	7.99	7.00-10.00	7.91	7.00	8.00	47.4	408.29
Misc. Heavy Equipment Op.	156	0	0.0	9.28	7.00-12.04	9.50	9.00	10.00	55.4	585.57
Mechanic	429	8	1.9	10.98	5.37-20.77	10.90	9.25	12.74	47.1	556.14
Electrician	82	0	0.0	13.21	6.00-25.00	12.57	12.50	13.63	44.6	619.55
Welder	134	4	3.0	9.96	6.72-20.50	9.00	6.72	10.00	43.2	446.21
Warehouseman	50	3	6.0	11.83	7.50-16.38	11.91	9.75	13.07	42.2	512.24
Laborer	338	23	6.8	6.56	4.75-11.54	6.01	6.00	6.50	47.1	332.26
Total All SIC's	11,653	172	1.5%	$10.50	$ 3.50-25.00	$10.20	$8.25	$12.10	47.3	$534.98

TABLE 11
STRAIGHT-TIME HOURLY WAGE AND EMPLOYMENT CHARACTERISTICS
FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES
BY STANDARD INDUSTRIAL CLASSIFICATION
1982

STANDARD INDUSTRIAL CLASSIFICATION 1311 (PRODUCTION)

Occupational Category	Estimated Total Number of Workers	Estimated Number of Female Workers	Estimated Percent Female	Average Hourly Wage	Wage Range (Low-High)	Median Hourly Wage	First Quartile Wage	Third Quartile Wage	Average Weekly Hours	Average Weekly Wage
Production Foreman	385	0	0.0%	$16.57	$ 8.96-22.12	$15.76	$15.76	$18.95	44.5	$774.65
Gas Plant Operator	197	4	2.0	12.42	8.50-12.94	12.45	12.45	12.45	40.6	507.98
Lease Operator	281	13	4.6	12.21	10.42-13.25	12.17	12.02	12.35	40.1	490.23
Pumper/Gauger	488	6	1.2	11.55	6.34-13.75	11.89	10.93	12.04	43.3	519.17
Gas Tester	29	0	0.0	10.40	8.42-14.25	9.07	9.07	13.01	46.8	522.08
Meterman	38	6	15.8	11.78	6.83-13.22	11.90	11.90	12.67	40.8	485.34
Roustabout	349	13	3.7	9.38	7.50-12.51	8.69	7.80	11.38	43.6	425.85
Truck Driver	36	0	0.0	9.60	7.00-12.78	9.21	8.00	11.70	44.4	447.36
Mechanic	164	7	4.3	12.71	8.00-13.89	12.79	12.46	13.81	40.5	517.93
Electrician	42	0	0.0	12.64	12.50-12.89	12.55	12.55	12.89	40.0	505.60
Warehouseman	31	3	9.7	13.31	9.75-16.38	13.07	11.91	15.29	40.7	546.38
Total SIC 1311	2,040	52	2.5%	$12.32	$ 6.34-22.12	$12.15	$10.93	$12.92	42.6	$540.85

STANDARD INDUSTRIAL CLASSIFICATION 1381 (DRILLING)

Tool Pusher	309	0	0.0%	$19.79	$13.22-24.50	$19.76	$19.33	$21.70	45.2	$945.96
Rotary Driller	748	1	0.1	15.15	12.21-16.85	15.30	14.80	15.60	44.1	699.17
Derrickman	721	0	0.0	12.03	9.61-13.48	12.10	11.80	12.50	43.9	551.58
Motorman	742	3	0.4	11.12	8.91-12.47	11.20	11.10	11.50	43.5	503.13
Floorman	1,341	6	0.4	10.65	8.49-12.08	10.85	10.04	10.90	43.6	483.51
Truck Driver	86	0	0.0	8.76	7.80-11.14	8.20	8.20	9.75	45.7	425.30
Mechanic	48	0	0.0	12.67	10.00-20.77	12.31	12.06	12.66	52.6	746.26
Electrician	40	0	0.0	13.81	6.00-25.00	13.63	12.31	15.45	49.5	749.19
Welder	22	0	0.0	9.99	8.25-12.88	10.00	9.70	10.00	46.7	500.00
Laborer	81	2	2.5	8.29	6.00-11.54	9.04	6.30	10.00	41.3	347.77
Total SIC 1381	4,138	12	0.3%	$12.43	$ 6.00-25.00	$11.40	$10.80	$13.48	44.0	$571.78

TABLE 11
(CONTINUED)

STANDARD INDUSTRIAL CLASSIFICATION 1389 (FIELD SERVICES)

Occupational Category	Estimated Total Number of Workers	Estimated Number of Female Workers	Estimated Percent Female	Average Hourly Wage	Wage Range (Low-High)	Median Hourly Wage	First Quartile Wage	Third Quartile Wage	Average Weekly Hours	Estimated Average Weekly Wage
Tool Pusher	196	0	0.0%	$13.42	$ 7.50-21.08	$14.32	$10.60	$15.38	53.4	$806.54
Rotary Driller	183	0	0.0	10.23	7.50-12.24	10.40	9.50	10.50	56.8	667.00
Derrickman	229	0	0.0	8.68	7.00-10.01	8.68	8.50	9.25	57.4	573.75
Floorman	511	0	0.0	8.60	6.50-9.75	8.60	8.35	9.05	58.2	578.78
Clean Out Driller	91	0	0.0	8.78	7.50-11.50	8.63	8.00	8.63	47.1	444.71
Clean Out Driller Helper	140	0	0.0	8.19	6.50-10.50	7.50	7.00	9.00	50.8	460.28
Well Puller	261	0	0.0	9.21	8.50-12.26	9.03	8.75	9.50	59.8	641.94
Service Rig Operator	61	0	0.0	10.07	7.75-13.42	10.13	10.13	10.55	47.7	519.11
Perforator Operator	87	0	0.0	8.98	6.40-10.00	8.50	8.50	10.00	56.4	580.11
Well Logger	152	16	10.5	6.58	4.04-10.50	7.50	4.04	7.50	44.0	302.68
Acid, Cement, Fracture, and Nitrogen Equipment Operator	291	1	0.3	7.82	6.00-11.80	7.18	7.58	7.59	55.2	491.10
Acid, Cement, Fracture, and Nitrogen Equipment Op. Helper	266	11	4.1	6.90	5.00-8.90	6.24	6.24	8.88	53.1	411.59
Bulk Materials Operator	167	4	2.4	5.62	3.50-7.50	5.50	5.50	5.97	54.0	342.82
Misc. Service Operator	728	7	1.0	9.65	4.37-17.00	9.50	8.67	10.00	47.6	496.01
Pumper/Gauger	82	11	13.4	10.51	6.00-12.65	11.27	9.50	12.00	50.9	592.24
Roustabout	956	30	3.1	6.78	5.50-8.75	6.88	6.25	7.00	46.2	334.25
Truck Driver	269	2	0.7	7.89	5.00-10.77	8.00	7.25	8.60	51.5	451.70
Backhoe Operator	51	0	0.0	7.99	7.00-10.00	7.91	7.00	8.00	47.4	408.29
Misc. Heavy Equipment Op.	156	0	0.0	9.28	7.00-12.04	9.50	9.00	10.00	55.4	585.57
Mechanic	217	1	0.5	9.30	5.37-20.00	9.32	8.92	9.50	50.8	522.66
Welder	112	4	3.6	9.95	6.72-20.50	9.00	6.72	9.50	42.5	435.31
Warehouseman	19	0	0.0	9.42	7.50-10.45	8.75	8.73	10.45	44.7	443.21
Laborer	257	21	8.2	6.01	4.75-8.00	6.00	6.00	6.01	48.9	320.63
Total SIC 1389	5,475	108	2.0%	$8.37	$ 3.50-21.08	$8.35	$7.00	$9.50	51.2	$475.42

DISTRIBUTION OF STRAIGHT-TIME HOURLY WAGES FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES

The distribution of straight-time hourly wages for each of the surveyed oil and natural gas extraction industry sectors and the overall industry are exhibited in Chart I, using relative frequency histograms. The first histogram gives the distribution for the production occupations of SIC 1311 firms. The mode for that distribution was the $12.01 to $12.50 interval which contained 24.8 percent of the production employees. That same interval also captured the average hourly wage and the median hourly wage for SIC 1311.

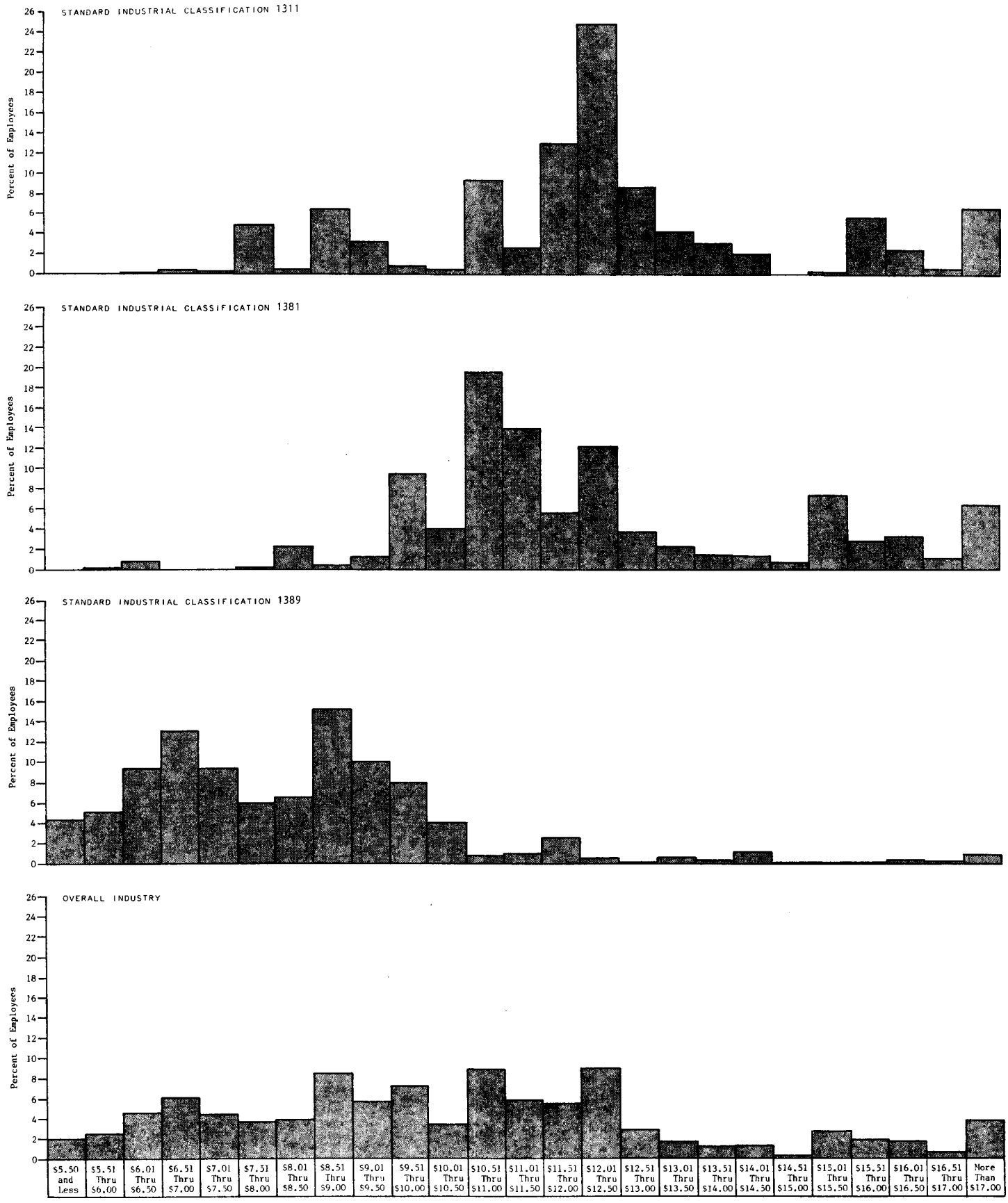
The second histogram displays the distribution for SIC 1381, drilling operations. The $10.51 to $11.00 interval was the mode for that distribution with 19.6 percent of the employment; however, the median hourly wage fell in the $11.01 to $11.50 interval, and the average hourly wage was in the interval from $12.01 to $12.50. That indicated a skewness in the distribution which was mainly caused by the high wages paid to tool pushers.

The distribution for field service workers, SIC 1389, is basically bimodal. The left hand mode, the $6.51 to $7.00 interval, represented the mode of the distribution of wages paid to laborers, roustabouts, helpers, well loggers, and bulk material operators. Equipment operators and the more skilled occupations were represented by the right hand mode, the $8.51 to $9.00 interval. The average hourly wage and the median hourly wage for field service workers fell between the two modes, in the $8.01 to $8.50 interval.

For the overall industry, the wage distribution had five peaks or modes--one peak corresponding to each of the modes observed in the three sectors and a fifth peak resulting from the overlap between the distributions for SIC 1381 and SIC 1389 in the $9.51 to $10.00 interval. The average hourly

wage and the median hourly wage for the overall industry occurred in the $10.01 to $10.50 interval which appears as a trough or low point roughly separating the SIC 1311 and SIC 1381 wages from the SIC 1389 wages. That positioning further emphasizes the lower average hourly wages paid to the SIC 1389 employees.

CHART 1
DISTRIBUTION OF STRAIGHT-TIME HOURLY WAGES
FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES
1982



COMPARISON OF AVERAGE STRAIGHT-TIME HOURLY WAGES FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES 1979, 1980, AND 1982

Wage and employment data for Wyoming's oil and natural gas extraction industry have been collected by the Wyoming Department of Labor and Statistics in four surveys conducted since 1977. With each successive survey, the number of occupations included within the scope of the surveys was expanded, and on two occasions, the survey design was changed in an effort to improve the necessary estimations and obtain more reliable statistics. Due to those changes over the years, it was difficult, and in some cases impossible, to obtain all industry wages that were comparable between current and prior surveys; however, for the occupations least effected by the survey changes, wage comparisons for 1979, 1980, and 1982 are given in Table III.

Standard Industrial Classification 1389, field services, was most effected by the survey changes since the occupations included in that sector have been greatly expanded with each successive survey, because additional categories were identified. Since SIC 1389 occupations are generally paid at a lower hourly rate than the other industry sectors, the inclusion of additional SIC 1389 categories resulted in a lower overall industry average wage. For this reason, the 18.3 and 11.3 percent wage increases for all occupations for the periods 1979-1980 and 1980-1982, respectively, displayed in Table III represent lower bounds of the average wage increases for all Wyoming oil and natural gas extraction workers. Thus, the actual industry average wage gains over the two periods would be nearer the 21.4 percent and 15.8 percent increases noted in the U.S. Consumer Price Index for the same time periods, thereby, keeping the oil and natural gas extraction industry competitive with wages found in other Wyoming mining industries.

TABLE III
COMPARISON OF AVERAGE STRAIGHT-TIME HOURLY WAGES FOR WYOMING
OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES
1979, 1980, AND 1982

Occupational Category	Average Hourly Wage March 1979	Average Hourly Wage October 1980	Average Hourly Wage October 1982	Dollar Increase 1979-1980	Percent Increase 1979-1980	Dollar Increase 1980-1982	Percent Increase 1980-1982
Rotary Driller	$9.42	$12.41	$14.19	$2.99	31.7%	1.78	14.3%
Derrickman	7.77	10.26	11.22	2.49	32.0	0.96	9.4
Motorman	8.57	10.23	11.12	1.66	19.4	0.89	8.9
Floorman	7.11	9.29	10.09	2.18	30.7	0.80	8.6
Gas Plant Operator	8.94	10.05	12.42	1.11	12.4	2.37	23.6
Lease Operator	8.39	10.12	12.21	1.73	20.6	2.09	20.7
Pumper/Gauger	8.62	9.67	11.40	1.05	12.2	1.73	17.9
Roustabout	6.50	7.08	7.48	0.58	8.9	0.40	5.6
All Occupations	$7.97	$9.43	$10.50	$1.46	18.3%	$1.07	11.3%

U.S. CONSUMER PRICE INDEX
1979, 1980, AND 1982

	March 1979	October 1980	October 1982	Index Point Change 1979-1980	Percent Change 1979-1980	Index Point Change 1980-1982	Percent Change 1980-1982
Consumer Price Index	209.1	253.9	294.1	44.8	21.4%	40.2	15.8%

SUMMARY OF FRINGE BENEFITS FOR WYOMING OIL AND NATURAL GAS EXTRACTION INDUSTRY EMPLOYEES

Each questionnaire contained a survey of fringe benefit programs offered by the employers, and 162 of the 163 returned questionnaires contained information for the fringe benefits section.

Health and Welfare

The fringe benefits questionnaire was designed to determine which types of insurance the firms offered their employees, and what percent of the total premium costs the employers paid. The following table details the responses of the surveyed firms.

	Percent of Firms Paying:				
Type of Benefit	None of the Cost	0% to 50% of the Cost	50% to 75% of the Cost	75% to 100% of the Cost	All of the Cost
Medical Insurance	6.6%	4.9%	23.0%	22.1%	43.4%
Dental Insurance	34.4	6.6	18.9	13.1	27.0
Vision Care	91.8	4.1	1.6	0.0	2.5
Pension Fund	45.9	2.5	4.9	3.3	43.4

In addition, paid life insurance was reported by 62.0 percent of the surveyed firms, and 40.5 percent furnished long term disability insurance for their employees.

Holiday and Leave Policies

No paid holidays were reported by 29.4 percent of the firms, with several of those firms reporting a guaranteed minimum weekly number of hours paid to their employees. Thus, at least part of any holiday hours were paid. The majority of firms paid one and one-half times the regular hourly rate for work performed on holidays, although double the regular rate was also prevalent. The following table displays the distribution of firms reporting paid holidays.

Number of Paid Holidays	0	1	2	3	4	5	6	7	8	9	10	11
Percent of Firms Reporting	29.4	4.6	1.8	0.9	0.9	5.5	10.1	11.9	2.8	11.0	18.3	2.8

A wide variety of vacation plans were reported by the firms, though most differences arose from the length of service required to achieve a given level within the plan (i.e., two weeks vacation after one year; two weeks vacation after two years; or two weeks vacation after five years). Also, some plans accumulated vacation based on months of service (i.e., one day vacation for each month of service) while others granted vacation at the end of a specified time (i.e., one week vacation after one year). By converting monthly accumulations to yearly totals and grouping the plans according to the maximum number of vacation weeks offered, seven vacation plan profiles were identified. The following table was constructed using the most frequently reported length of service requirement for each profile.

Vacation Plan Description	Percent of Firms Reporting
Two weeks per year after one year, three weeks after five years, four weeks after ten years, five weeks after 20 years, and six weeks after 30 years of service.	9.1%
Two weeks per year after one year, three weeks after five years, four weeks after ten years, and five weeks after 20 years of service.	9.9
Two weeks per year after one year, three weeks after five years, and four weeks after ten years of service.	12.4
Two weeks per year after one year and three weeks after five years of service.	14.0
Two weeks per year after one year of service.	39.7
One week per year after one year of service.	8.3
No paid vacation.	6.6

Sick Leave Plan Description	Percent of Firms Reporting
No paid sick leave (frequently coupled with a guaranteed minimum number of hours paid each week).	52.1%
Short term disability insurance in lieu of sick leave.	20.6
Varying from three to 30 days per year with the maximum accruable sick leave ranging from 30 to 150 days.	18.2
Paid as needed with appropriate verification.	9.1

No reported short term disability payment schedules were identical, but all offered a varying combination of partially paid and fully paid weeks, dependent upon length of service, ranging from one week at half pay after three months of service to 27 weeks at full pay plus 77 weeks at half pay after 13 years of service.

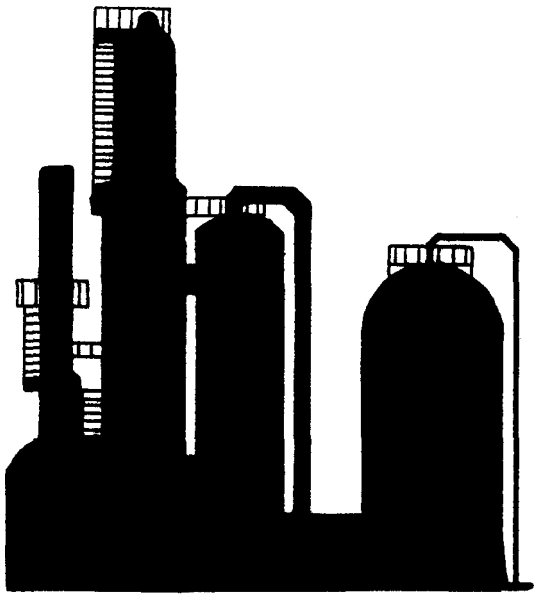
In addition to the foregoing leave benefits, 50.4 percent of the firms reported provisions for paid funeral leave, 51.2 percent paid jury duty leave, and 27.3 percent paid military duty leave. Paid maternity leave was provided by 21.5 percent of the firms, and 9.9 percent allowed their male employees a day off with pay when his wife gave birth to a child.

Miscellaneous Benefits

Profit sharing plans were reported by 27.3 percent of the firms, employee stock purchase plans by 24.0 percent, and 23.1 percent had a contributory savings plan. A bonus was paid by 29.8 percent of the companies and educational assistance was offered by 8.3 percent. Less than five percent of the reporting firms offered one or more of the following: clothing allowance, counseling and rehabilitation programs beyond insurance coverage, employee charitable contribution match, housing allowance, moving allowance, physical fitness program reimbursement, tool allowance, and travel accident insurance.

OIL

REFINING



SURVEY RESULTS

A total of 716 employees was counted in the Wyoming oil refinery industry during the fourth quarter of 1982. That was a decline of 42.2 percent or 523 workers since the Department of Labor and Statistics' previous survey was conducted in the fourth quarter of 1980. That decline reflected the closure of several of the State's refineries which resulted from a glut of refined products and reduced profits due to plant aging.

For the purposes of this report, the surveyed workers were classified into two general occupational groups or sectors: production personnel and maintenance personnel. For each sector and the overall industry, a summary of total employment, average straight-time hourly wages, and the percent of employment covered under a collective bargaining agreement is given below for all employees except those in clerical, managerial, and other salaried positions.

	Production Personnel	Maintenance Personnel	Industry Total
Number of Workers	440	211	651
Average Straight-time Hourly Wages	$12.57	$12.75	$12.63
Percent of Workers Under Union Contract	87.3%	89.1%	87.9%

Further details covering wage and employment characteristics of the oil refinery worker appear in Tables IV through VI and in Chart II on the following pages.

STRAIGHT-TIME HOURLY WAGE AND EMPLOYMENT CHARACTERISTICS FOR WYOMING OIL REFINERY EMPLOYEES

Table IV displays the straight-time hourly wage and employment characteristics, by occupation, for all Wyoming oil refinery workers except those in clerical, managerial, and other salaried positions. The average straight-time hourly wage for the 651 surveyed refinery workers was $12.63 in the fourth quarter of 1982. Only 18 or 2.8 percent of the employees were female, while 572 workers, representing 87.9 percent of the total surveyed employment, were covered under a collective bargaining agreement.

Production workers accounted for 440 of the total 651 surveyed employees and averaged $12.57 in straight-time hourly wages. The chief operator category received the highest average hourly wage among production workers and the overall industry with $14.13 per hour. The second highest paid production occupation, controlman, averaged $13.41 per hour, followed by the boiler fireman category with $13.38. Laborer was the lowest paid occupation among production workers and the overall industry with an average straight-time hourly wage of $10.14. Female employees accounted for 3.2 percent of the refinery production workers with the operator and still operator categories each employing four women; laboratory technician had 3; and the chief operator, still helper/cleaner, and package filler categories each had one female employee.

All refinery maintenance employees averaged $12.75 in straight-time hourly wages, ranging from $13.66 per hour for the boilermaker category to warehouseman with $11.39 per hour. Only three of the refinery maintenance occupations had female employees which accounted for 1.9 percent of the sector's employment. Those three categories were: carpenter, with two women; machinist, with one; and warehouseman, with one.

Collective bargaining agreements covered 87.3 percent of the refinery production workers and 89.1 percent of the

maintenance employees. The Oil, Chemical, and Atomic Workers International Union represented all the union members except the workers at one refinery which were represented by the International Union of Operating Engineers.

Due to the small number of firms included in the refinery survey, it was not possible to display median wages, wage ranges, or the first and third quartile wages for each occupation without compromising the confidentiality of the wage data for individual companies. Thus, those statistics have been omitted from this section. For the overall industry, the lowest pay reported was $7.00 per hour and the highest pay was $19.04 per hour in straight-time wages. The industry median wage was $12.58 per hour with 25 percent of the workers earning less than $12.43 per hour and 25 percent of the workers earning more than $13.27 per hour.

TABLE IV
STRAIGHT-TIME HOURLY WAGE AND EMPLOYMENT CHARACTERISTICS
FOR WYOMING OIL REFINERY EMPLOYEES
1982

PRODUCTION WORKERS

Occupational Category	Average Hourly Wage	Total Number of Workers	Number of Female Workers	Percent Female	Number Under Union Contract	Percent Under Union Contract
Chief Operator	$14.13	39	1	2.6%	30	76.9%
Operator	12.62	60	4	6.7	53	88.3
Controlman	13.41	36	0	0.0	31	86.1
Still Operator	12.79	95	4	4.2	87	91.6
Still Helper/Cleaner	12.65	37	1	2.7	37	100.0
Pumpman	12.62	20	0	0.0	14	70.0
Tester	11.53	16	0	0.0	13	81.3
Treater	12.70	6	0	0.0	1	16.7
Boiler Fireman	13.38	17	0	0.0	13	76.5
Loader, Tank Car/Truck	12.17	26	0	0.0	24	92.3
Package Filler	13.08	11	1	9.1	11	100.0
Laborer	10.14	25	0	0.0	25	100.0
Truck Driver	10.98	11	0	0.0	7	63.6
Laboratory Technician	12.29	16	3	18.8	13	81.3
Misc. Equipment Operator	11.67	25	0	0.0	25	100.0
Production Totals	$12.57	440	14	3.2%	384	87.3%

MAINTENANCE WORKERS

Boilermaker	$13.66	7	0	0.0%	7	100.0%
Pipefitter	12.83	60	0	0.0	54	90.0
Insulator	12.42	5	0	0.0	5	100.0
Instrument Repairman	12.91	23	0	0.0	21	91.3
Machinist	12.70	19	1	5.3	18	94.7
Mechanic	12.89	32	0	0.0	25	78.1
Electrician	12.83	15	0	0.0	13	86.7
Welder	12.80	20	0	0.0	17	85.0
Carpenter	12.72	16	2	12.5	15	93.8
Warehouseman	11.39	14	1	7.1	13	92.9
Maintenance Totals	$12.75	211	4	1.9%	188	89.1%
Industry Totals	$12.63	651	18	2.8%	572	87.9%

DISTRIBUTION OF STRAIGHT-TIME HOURLY WAGES FOR WYOMING OIL REFINERY EMPLOYEES

The distributions of straight-time hourly wages for the Wyoming oil refinery production and maintenance sectors are tabulated, by occupation and sex, in Table V. Chart II uses relative frequency histograms to compare the wage distributions for the production sector, the maintenance sector, and the overall industry.

The two dollar wage interval, $12.01 through $14.00, captured 74.6 percent of all surveyed oil refinery workers and 61.1 percent of the female employees. That same interval contained 70.5 percent of all oil refinery production employees and 57.1 percent of the female production workers. Similarly, 83.4 percent of the maintenance employees and 75.0 percent of the female maintenance employees fell within the $12.01 through $14.00 wage interval. Examination of wages within each occupational category revealed no significant differences between male and female wages.

The mode for each of the distributions displayed in Chart II was the $13.01 to $13.50 interval with 26.4 percent of all surveyed oil refinery workers. The $12.01 to $12.50 interval contained 20.7 percent of the employees.

TABLE V
DISTRIBUTION OF STRAIGHT-TIME HOURLY WAGES FOR WYOMING
OIL REFINERY EMPLOYEES
1982

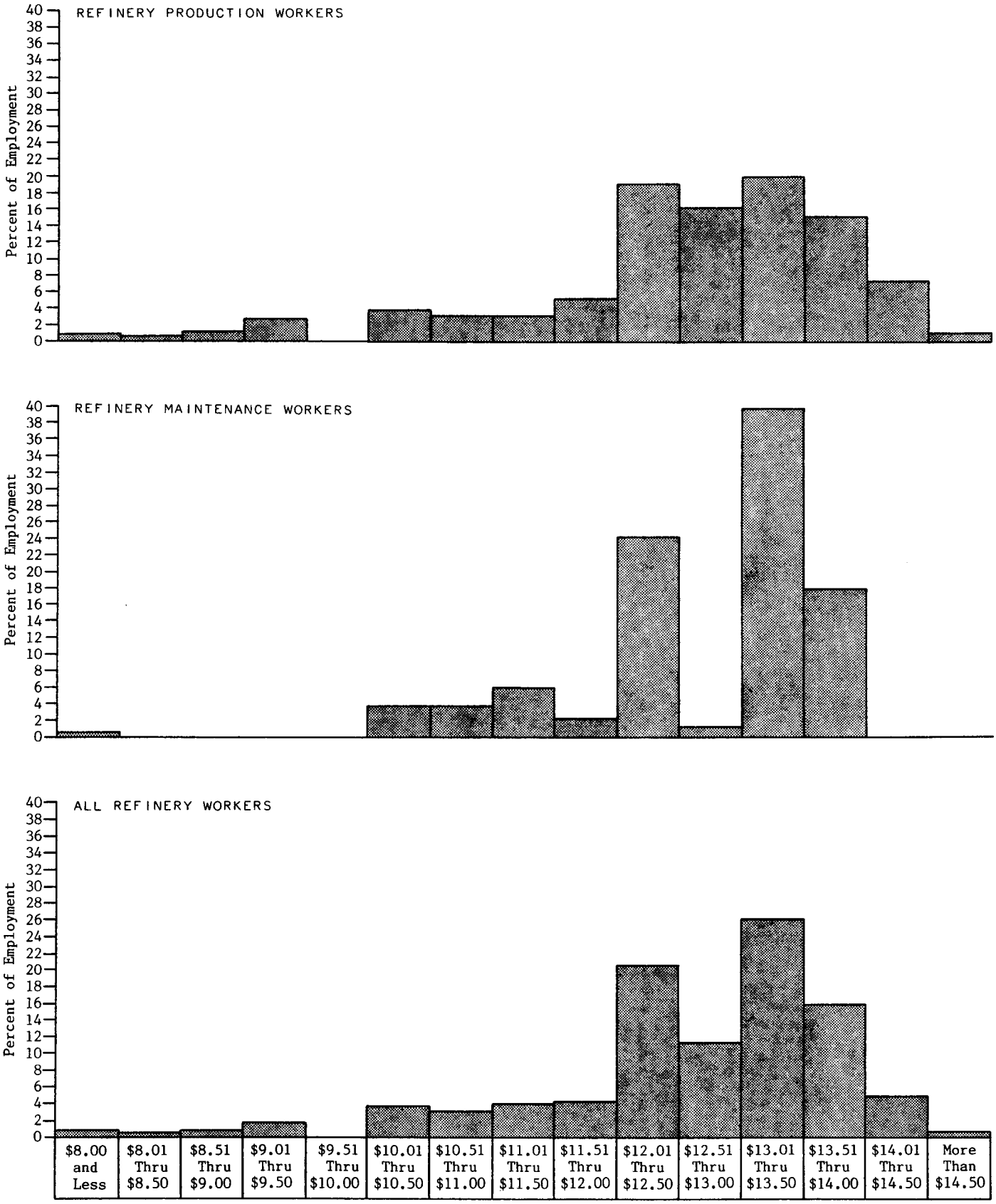
PRODUCTION WORKERS

Occupational Category	$8.00 and Less		$8.01 Thru $8.50		$8.51 Thru $9.00		$9.01 Thru $9.50		$9.51 Thru $10.00		$10.01 Thru $10.50		$10.51 Thru $11.00		$11.01 Thru $11.50		$11.51 Thru $12.00		$12.01 Thru $12.50		$12.51 Thru $13.00		$13.01 Thru $13.50		$13.51 Thru $14.00		$14.01 Thru $14.50		More Than $14.50	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Chief Operator																									8		29	1	1	
Operator											4								46	3			2	1					4	
Controlman																					14		5		17					
Still Operator		1				2									13						42	1	5		31					
Still Helper/Cleaner													7	1									29							
Pumpman													4								4		10		2					
Tester											4						3		9											
Treater																					5		1							
Boiler Fireman																							9		8					
Loader, Tank Car/Truck	1										3								10		4		8							
Package Filler											1								1	1			4		1		3			
Laborer							12				5						8													
Truck Driver	2				2														3				4							
Laboratory Technician						1							1						7	2			5							
Misc. Equipment Operator			3										1		1		12		2		1		5							
Production Total (440)	3	1	3	0	2	3	12	0	0	0	17	0	13	1	14	0	23	0	78	6	70	1	87	1	67	0	32	1	5	0

MAINTENANCE WORKERS

Boilermaker																							2		5					
Pipefitter											3		2						20				25		10					
Insulator													1						2				2							
Instrument Repairman											2		1						3				11		6					
Machinist											1								10	1			4		3					
Mechanic	1														2		3				3		15		8					
Electrician													2						3				8		2					
Welder											1				2				4				10		3					
Carpenter											1								5	2			7		1					
Warehouseman													2		8	1	2		1											
Maintenance Total (211)	1	0	0	0	0	0	0	0	0	0	8	0	8	0	12	1	5	0	48	3	3	0	84	0	38	0	0	0	0	0
Industry Total (651)	4	1	3	0	2	3	12	0	0	0	25	0	21	1	26	1	28	0	126	9	73	1	171	1	105	0	32	1	5	0

CHART II
DISTRIBUTION OF STRAIGHT-TIME HOURLY WAGES
FOR WYOMING OIL REFINERY EMPLOYEES
1982



COMPARISON OF AVERAGE STRAIGHT-TIME HOURLY WAGES FOR WYOMING OIL REFINERY EMPLOYEES 1977, 1980, AND 1982

Since 1965, the Wyoming Department of Labor and Statistics has conducted five wage and employment surveys relative to Wyoming's oil refinery industry. The average straight-time hourly wage for all oil refinery workers was $3.22 per hour in 1965 and $12.63 per hour in 1982. That yielded an average increase of $9.41 per hour or a 292.2 percent wage increase over the 17 year period. By way of comparison, the U.S. Department of Labor's Consumer Price Index for the same time span increased by 211.2 percent. Thus, Wyoming's oil refinery employees have more than kept pace with inflationary increases, which is consistent with the trends observed in other energy-related Wyoming industries.

Utilizing data from the surveys conducted in 1977 and 1980, historical wages for selected refinery occupations and the overall industry are compared to wages determined by the present survey in Table VI. From 1977 to 1980, the average straight-time hourly wage for all Wyoming refinery workers rose by $1.81 per hour or 21.1 percent compared to a 36.4 percent increase in the U.S. Consumer Price Index. That has been the only time the survey results have shown wage gains at a tempo slower than the national inflation rate, and was largely due to the sharp inflationary increases experienced throughout 1979 and 1980. For the period 1980 to 1982, Wyoming oil refinery wages increased by 21.8 percent which, once again, out distanced the 15.8 percent increase experienced in the U.S. Consumer Price Index over the same time span.

TABLE VI
COMPARISON OF AVERAGE STRAIGHT-TIME HOURLY WAGES FOR
WYOMING OIL REFINERY EMPLOYEES
1977, 1980, AND 1982

Occupational Category	Average Hourly Wage December 1977	Average Hourly Wage October 1980	Average Hourly Wage October 1982	Dollar Increase 1977-1980	Percent Increase 1977-1980	Dollar Increase 1980-1982	Percent Increase 1980-1982
Still Operator	$9.38	$10.81	$12.79	$1.43	15.2%	$1.98	18.3%
Still Helper/Cleaner	8.39	10.67	12.65	2.28	27.2	1.98	18.6
Pumpman	8.34	10.91	12.62	2.57	30.8	1.71	15.7
Boiler Fireman	8.89	10.88	13.38	1.99	22.4	2.50	23.0
Loader	8.04	10.38	12.17	2.34	29.1	1.79	17.2
Laborer	6.83	8.11	10.14	1.28	18.7	2.03	25.0
Pipefitter	8.93	10.70	12.83	1.77	19.8	2.13	19.9
Instrument Repairman	8.84	10.78	12.91	1.94	21.9	2.13	19.8
Machinist	8.77	10.86	12.70	2.09	23.8	1.84	16.9
Mechanic	8.74	10.27	12.89	1.53	17.5	2.62	25.5
Electrician	8.71	10.64	12.83	1.93	22.2	2.19	20.6
All Occupations	$8.56	$10.37	$12.63	$1.81	21.1%	$2.26	21.8%

U.S. CONSUMER PRICE INDEX
1977, 1980, AND 1982

	December 1977	October 1980	October 1982	Index Point Change 1977-1980	Percent Change 1977-1980	Index Point Change 1980-1982	Percent Change 1980-1982
Consumer Price Index	186.1	253.9	294.1	67.8	36.4%	40.2	15.8%

SUMMARY OF FRINGE BENEFITS FOR WYOMING OIL REFINERY EMPLOYEES

Each survey questionnaire contained a section pertaining to employer paid fringe benefit programs which was completed by all nine of the responding firms. A synopsis of the fringe benefits survey follows.

Health and Welfare

The fringe benefits questionnaire was designed to determine which types of insurance the firms offered their employees and what percent of the total premium costs the employers paid. In addition to the benefits tabled below, paid life insurance was reported by 55.6 percent of the surveyed firms, and 44.4 percent furnished long term disability insurance for their employees.

	Percent of Firms Paying:				
Type of Benefit	None of the Cost	0% to 50% of the Cost	50% to 75% of the Cost	75% to 100% of the Cost	All of the Cost
Medical Insurance	22.2%	0.0%	0.0%	55.6%	22.2%
Dental Insurance	33.3	0.0	0.0	44.4	22.2
Vision Care	55.6	11.1	0.0	22.2	11.1
Pension Fund	33.3	11.1	0.0	11.1	44.4

Holiday and Leave Policies

Ten paid holidays were reported by 55.6 percent of the refinery companies. No paid holidays, five, six, and 11 paid holidays were each reported by 11.1 percent of the responding firms. All work performed on a holiday was paid at two and one-half times the regular hourly rate by most of the firms. One and one-half times the regular hourly rate was paid for normal overtime by all of the reporting companies. All firms also reported 40 hours as the normal workweek for their employees.

A wide variety of vacation plans were reported by the refinery companies, though most differences arose from the

length of service required to qualify for a stated amount of vacation time. By using the most frequently reported length of service requirement and classifying the vacation plans according to the maximum number of vacation weeks granted, the following table was constructed.

Vacation Plan Description	Percent of Firms Reporting
Two weeks per year after one year, three weeks after five years, four weeks after ten years, five weeks after 20 years, and six weeks after 30 years of service.	33.3%
Two weeks per year after one year, three weeks after five years, four weeks after ten years, and five weeks after 20 years of service.	11.1
Two weeks per year after one year, three weeks after five years, and four weeks after 15 years of service.	22.2
One week per year after one year, and two weeks per year after five years of service.	11.1
Two weeks per year after one year of service.	22.2

Sick Leave Plan Description	Percent of Firms Reporting
Short term disability insurance in lieu of sick leave.	55.6%
Paid as needed with appropriate verification.	22.2
One and one-fourth days of sick leave earned for each month of service. Maximum accruable was 92 days.	11.1
No sick leave.	11.1

The short term disability payment schedules featured a varying combination of fully paid and partially paid weeks dependent upon length of service, but no schedules were identical. Paid benefits ranged from one week at full pay after six months service to twenty-two weeks at full pay after ten years of service.

In addition to the foregoing leave benefits, 77.8 percent of the firms reported provisions for paid funeral leave, 66.7 percent paid jury duty leave, and 55.6 percent paid military leave. Paid maternity leave was provided by 44.4 percent of the refinery companies.

Miscellaneous Benefits

Contributory savings plans were offered by 55.6 percent of the reporting firms, and employee stock purchase plans were reported by 22.2 percent. Profit sharing, educational assistance, bonuses, and a vehicle allowance were each offered by 11.1 percent of the refineries.

APPENDIX I
SURVEY PROCEDURES

Information on the number, type, and size of establishments in the crude petroleum and natural gas extraction industry was obtained from the Wyoming Employment Security Commission's ES202 file. Based on this information, it was determined that 649 firms came within the scope of the survey. A probability proportional to size sampling scheme was employed to reduce estimation errors and to derive a representative sample of 219 firms. Pertinent statistical techniques were applied to obtain estimated employment totals, average hourly wages, and the various percentages contained in this report.

For the oil refinery industry, the ES202 file was again utilized to identify 14 oil refineries within Wyoming. Each of those refineries was mailed a questionnaire, and all 14 responded. Thus, no estimation was necessary, and the standard calculations for the published averages and percentages were performed.

It should be realized that final wage and employment computations may be influenced by 1) sampling errors, 2) misclassification of employees, 3) differences in the job duties and descriptions utilized by each firm, and 4) accidental erroneous wage reports. Consequently, the reported average wages should be considered as general guidelines rather than absolute prevailing wage rates.

APPENDIX II
OCCUPATIONAL TITLES AND DESCRIPTIONS: OIL AND GAS EXTRACTION

Acid, Cement, Fracture, and Nitrogen Equipment Operator (DOT 939.462-010): Controls pumping and blending equipment to acidize, cement, fracture, or inject nitrogen in oil and gas wells and permeable rock formations.

Acid, Cement, Fracture, and Nitrogen Equipment Operator Helper (DOT 939.684-018): Assists equipment operator in controlling blending and pumping equipment to treat oil and and gas wells and permeable rock formations.

Backhoe Operator (DOT 850.683-030): Operates a backhoe to move dirt, rock, sand, or other material.

Bulk Materials Operator (DOT 570.362-010): Controls conveyors and blending equipment to mix materials according to specifications for use in cementing and servicing oil and gas wells.

Clean Out Driller (DOT 930.363-010): Operates truck-mounted hoist equipped with derrick to clean out and restore old and damaged oil or gas wells.

Clean Out Driller Helper (DOT 930.664-014): Assists clean out driller; cleans out and restores old or damaged gas or oil wells using hand tools.

Derrickman (DOT 930.684-026 and 930.683-018): Assists rotary driller in operating machinery to drill oil and gas wells; transfers rod or pipe sections to and from derrick racks to rod lifting clamps as sections are removed or returned to wells.

Electrician (DOT 824-261-010): Installs, maintains, and repairs electrical equipment; performs electrical trade functions at the well site.

Floorman (DOT 930.684-014): Assists in connecting and disconnecting sections of the drill string; controls the proper flow and function of drilling mud, and performs other duties as assigned.

Gas Plant Operator (DOT 549.382-010): Operates automatically controlled natural gas separating and treating unit in an oilfield to render gas suitable for fuel and for pipeline transportation.

Gas Tester (DOT 029.261-010): Performs laboratory tests according to prescribed standards to determine chemical and physical characteristics of natural gas.

Laborer (DOT 939.687-018): Performs a variety of tasks in an oilfield using hand tools.

Lease Operator (DOT 939.131-014): Supervises and coordinates activities of workers engaged in pumping, gauging, and treating oil from wells within specified oilfield areas. May designate allowable flow from wells in accordance with proration regulations and agreements.

Mechanic (DOT 620.281-046): Maintains and repairs oilfield machinery and other mechanical equipment.

Meterman (DOT 914.384-010): Regulates flow of oil and other petroleum products into pipelines at wells and tank farm. Gauges and tests amount of oil in storage tanks.

Miscellaneous Heavy Equipment Operator: Operates a wide variety of heavy equipment including crane, dozer, scraper, and grader.

Miscellaneous Service Equipment Operator: Operates oilfield service equipment not elsewhere specified. Includes casing crew, directional driller, drill collar operator, fishing tool technician, lay-down machine operator, pipe and collar inspector, and pipe threader among others.

Motorman (DOT 950.382-022): Operates gasoline, natural gas, or diesel engines to supply power for rotary well drilling machinery.

Perforator Operator (DOT 931.382-010): Operates truck mounted hoisting equipment and electrical control panel to position and explode charges in oil or gas wells to pierce drill pipes, casings, tubings, and fracture earth formations.

Production Foreman (DOT 181.167-014): Directs activities concerned with producing oil and gas from wells within one or more oil fields. May coordinate exploratory drilling activities.

Pumper/Gauger (DOT 914.382-010 and 814.382-022): Operates pumps and auxiliary equipment to restore and control flow of oil or gas from wells in the oilfield.

Rotary Driller (DOT 930.382-026): Directly responsible to the tool pusher and supervises the drilling operations during his or her shift.

Roustabout (DOT 869.684-046): Assembles and repairs oilfield machinery and equipment using hand and power tools. Usually an entry level position.

Service Rig Operator (DOT 930.361-010): Operates equipment to increase oil flow from producing wells or to remove stuck pipe, casing, tools, or other obstructions from drilling wells.

Tool Pusher (DOT 930.130-010): Supervises and coordinates activities of workers engaged in drilling oil or gas wells in area consisting of one or more well sites.

Truck Driver (DOT 905.663-014 and 906.683-022): Drives a truck to transport materials or equipment in and around oil or gas fields.

Warehouseman (DOT 922.687-058): Requisitions, receives, stores, issues, and maintains tools, equipment, and supplies used in the oilfield.

Welder (DOT 819.384-010): Performs the welding duties necessary to maintain oilfield equipment, pipelines, and machinery.

Well Logger (DOT 010.281-022): Analyzes mud and drill cuttings that are circulated through oil or gas well boreholes during drilling operations.

Well Puller (DOT 930.382-030): Controls power hoisting equipment to pull casing, tubing, and pumping rods from oil and gas wells for repair and to lower repaired equipment, testing devices, and servicing tools into wells.

Source: U.S. Department of Labor, Employment and Training Administration, Dictionary of Occupational Titles, 4th ed., 1977, (Washington, D.C.: U.S. Government Printing Office, 1977).

OCCUPATIONAL TITLES AND DESCRIPTIONS: REFINERY OPERATIONS

Boiler Fireman (DOT 950.382-010 and 573.685-014): Controls boilers to maintain temperature in furnaces of petroleum processing units according to specifications.

Boilermaker (DOT 805.261-014): Assembles and repairs boilers, tanks, and pressure vessels.

Carpenter (DOT 860.281-010): Performs the carpentry duties necessary to construct or maintain building woodwork and other wooden items.

Chief Operator (DOT 549.132-030): Supervises and coordinates the operation of the various units in the petroleum refining process according to run sheets, test books, order books, and pumping records.

Compounder (DOT 540.382-010): Blends or compounds various lubricating oils or greases according to specifications.

Controlman (DOT 546.382-010): Operates control panels to regulate temperature, pressure, rate of flow, and tank level in petroleum refining and treating units according to process schedules.

Crane Operator (DOT 921.663-022): Operates a crane to hoist, move, and place materials, machinery, and pipe.

Electrician (DOT 829.281-014): Performs a variety of tasks related to the installing, maintaining, or repairing of electrical equipment.

Gauger (DOT 914.384-010 and 914.382-014): Regulates and measures the flow of oil in pipelines or storage tanks.

Instrument Repairman (DOT 710.281-026): Installs, maintains, adjusts, and repairs manual, pneumatic, or electronic measuring, recording, and regulating instruments.

Insulator (DOT 869.664-014): Installs thermal insulation around the outside of stills, pipelines, and other equipment as an aid to fire prevention.

Janitor (DOT 381.687-018): Cleans and maintains work areas, offices, and building grounds.

Laboratory Technician (DOT 029.261-022): Performs laboratory tests according to prescribed standards to determine chemical and physical characteristics of crude oil and petroleum products during processing stages.

Loader, Tank Car or Truck (DOT 914.667-010): Pumps liquid petroleum products or other liquids into or from tank cars or trucks.

Machinist (DOT 600.280-042): Produces new or replacement parts for mechanical equipment.

Mechanic (DOT 638.281-014 and 620.281-046): Maintains and repairs machinery and mechanical equipment.

Operator (DOT 546.382-010): Performs two or more operations in the refining process.

Package Filler (DOT 920.685-078): Tends the operation of an automatic or semi-automatic machine which fills containers with commodity being packaged.

Painter (DOT 741.687-018): Scrapes, cleans, and paints plant woodwork and equipment.

Pipefitter (DOT 862.381-018): Installs or repairs water, steam, gas, or other types of pipes or pipe fittings in an establishment.

Pumpman (DOT 549.360-010): Operates one or more power driven pumps to effect the movement of petroleum products or water.

Still Helper/Cleaner (DOT 891.687-030): Helps still operator; tends and cleans burners and stills to ensure proper operation.

Still Operator (DOT 549.362-010): Operates one or more stills in which crude or other oil is heated and separated into its various components.

Tester (DOT 029.261-022): Performs tests on petroleum products and submits results to the various departments enabling them to control the distillation and treatment process.

Treater (DOT 549.362-014): Treats petroleum products with chemicals, steam, water, or air to remove sulphur or other impurities.

Truck Driver (DOT 905.663-014 and 906.683-022): Drives a truck to transport materials, merchandise, or equipment.

Warehouseman (DOT 922.687-058): Requisitions, receives, stores, issues, and maintains tools, equipment, and supplies used in the refinery operation.

Welder (DOT 819.384-010): Performs the welding duties necessary to maintain plant machinery and equipment.

Source: U.S. Department of Labor, Employment and Training Administration, Dictionary of Occupational Titles, 4th ed., 1977, (Washington, D.C.: U.S. Government Printing Office, 1977).

REFERENCES

Beck, Robert J. and John C. McCaslin, "OGJ Report," Oil & Gas Journal, Vol. 81, No. 5, pp. 71-114, January 31, 1983.

Dotton, G. L. and others, Estimates of Undiscovered Recoverable Conventional Resources of Oil and Gas in the United States, U.S. Geological Survey, Circ. 860, Washington, D.C., 1982.

Wyoming Department of Labor and Statistics:

Survey of Wyoming Refineries, 1965.

Wyoming Crude Petroleum & Natural Gas Extraction: A Wage & Employment Survey, 1979.

Wyoming Oil and Natural Gas Drilling, Production, and Refining: A Wage & Employment Survey, 1980.

Wyoming: The Oil Refining Industry, A Manpower Survey, December 1977.