



# Industry Wage Survey: Shipbuilding and Repairing, September 1976

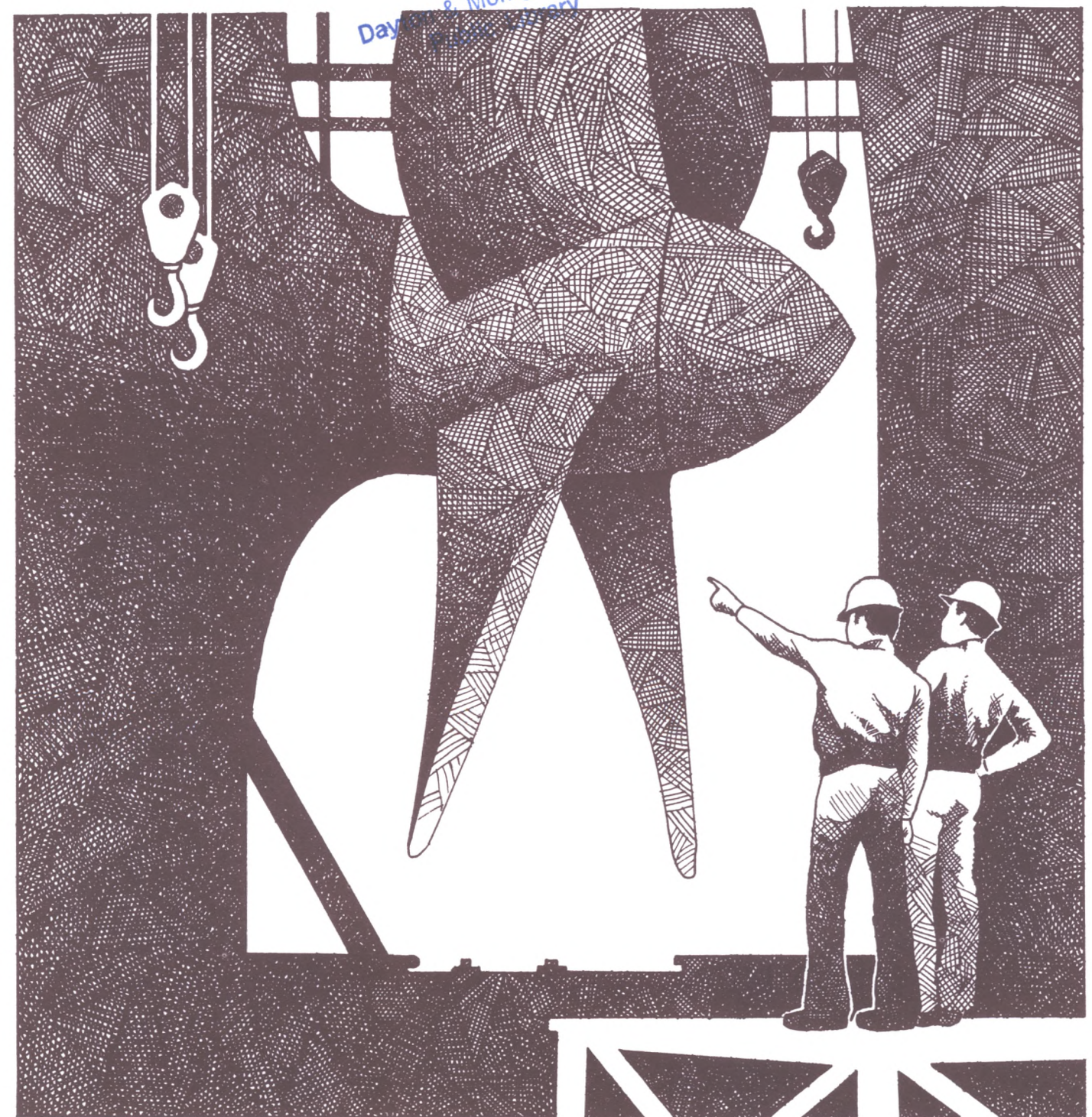
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# Industry Wage Survey: Shipbuilding and Repairing, September 1976

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U.S. Department of Labor  
Ray Marshall, Secretary

Bureau of Labor Statistics  
Julius Shiskin, Commissioner  
1977

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## Preface

This bulletin summarizes the results of a Bureau of Labor Statistics survey of wages and related benefits in the shipbuilding and repairing industry in September 1976. This is the first shipbuilding occupational wage survey conducted by the Bureau in about 35 years.

The study was conducted in the Bureau's Office of Wages and Industrial Relations. The analysis was prepared by Joseph C. Bush in the Division of Occupational Wage Structures. Field work for the survey was directed by the Assistant Regional Commissioners for Operations.

Other reports available from the Bureau's program of industry wage studies, as well as the addresses of the Bureau's regional offices, are listed at the end of this bulletin.

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# Shipbuilding and Repairing, September 1976

## Summary

Straight-time earnings of production and related workers in the private shipbuilding and repairing industry averaged \$5.66 an hour in September 1976.<sup>1</sup> Earnings of 94 percent of the 104,015 production workers within the scope of the survey—those in shipyards with at least 250 workers—were between \$4 and \$7.50 an hour. Regionally, workers in shipyards at Atlantic ports, slightly over two-fifths of the work force, averaged \$5.55 an hour. Averages in the other ports were \$5.26 on the Gulf Coast, \$5.56 on the Great Lakes, and \$6.83 for shipyard workers on the Pacific Coast.

Nationwide, averages among the jobs selected for separate study ranged from \$4.34 for guards to \$6.58 for loft workers. The largest group of workers studied, 8,514 shipfitters, averaged \$6.09 an hour.

Virtually all workers covered by the survey were employed by shipyards having provisions for paid holidays and paid vacations, and about 95 percent or more of the employers paid at least part of the cost of life, hospitalization, surgical, basic medical, and major medical insurance; and retirement pension plans.

## Industry characteristics

This survey of private shipyards covered establishments building and repairing all types of ships, barges, and lighters, whether propelled by motor or towed. Included were yards converting and altering ships, but excluded from the survey were (1) separate auxiliary units; (2) establishments fabricating structural assemblies; (3) subcontractors; and (4) U.S. Navy shipyards.<sup>2</sup>

*Employment.* Approximately 104,000 production and related workers were employed in shipyards covered by the September 1976 survey. Just over four-tenths of the workers were employed at Atlantic Coast yards, three-tenths on the Gulf Coast, one-sixth on the Pacific, and 3 percent on the Great Lakes. The remaining workers were found mostly in yards on the Mississippi and Ohio rivers. The 78 yards within scope of the survey had total employment of 142,000 and averaged 1,334 production workers.

*Production.* Shipyards with large drydocks frequently construct and repair both merchant and naval vessels. Other yards may specialize in construction or repair.

As of January 1, 1977, there were 71 merchant vessels weighing at least 1,000 gross tons each under construction in 18 private shipyards.<sup>3</sup> Thirty-one of these were oil

tankers; 16 were liquid natural gas carriers; 10 were dry bulk carriers; and the remaining were mostly general cargo-container ships and ferries. In addition to construction, private yards also repaired, 7,600 ships in 1976; this type of work, which includes both commercial and naval ships, was valued at approximately \$1.4 billion.

In eleven private shipyards, there were also 88 naval vessels under construction or on order as of January 1, 1977. (New ships presently are not built in U.S. Navy shipyards.) Twenty-seven were attack submarines, 25 were destroyers, 12 were guided missile frigates, and the remaining were divided among nine other types of craft, including two nuclear aircraft carriers. In relative size, each of the two nuclear aircraft carriers will displace 71,000 tons contrasted with 27 attack submarines which had an average displacement of 6,000 tons.

Besides construction of large merchant and naval vessels, U.S. private shipyards also are engaged in other types of marine work. Ten yards, as of January 1, 1977, were making offshore drilling rigs; some facilities only repair ships; and others build small vessels under 1,000 tons such as fishing boats and small barges. Over the past year shipbuilding has declined for merchant vessels, but has increased for navy ships. Under construction as of January 1, 1976, were 79 merchant vessels compared with 71 as of January 1, 1977. Only 15 merchant vessels totaling 327,000 tons were ordered in 1976 and 14 totaling 599,000 tons in 1975 contrasted with 43 merchant vessels grossing 2,018,000 tons ordered in 1973 and 25 vessels grossing 1,771,000 tons in 1974. The 88 naval ships being built as of January 1, 1977 were 12 more than in the previous year. Since 2 to 3 years are required to design and build a large modern ship, considerable concern has been expressed about the utilization of yard capacity after 1977.

*Union contract status.* Nine-tenths of the production workers were employed in establishments which had collective bargaining agreements covering a majority of the workers in a yard. Most nonunion workers were employed at Gulf Coast yards. Nationwide, union yards averaged 1,665 production workers; nonunion yards, 489 workers. The two principal unions were the International Brotherhood

<sup>1</sup> Earnings data in this report exclude premium pay for overtime and for work on weekends, holidays, and late shifts. See appendix B for scope and method of study.

<sup>2</sup> See appendix A for a brief description of the pay structure at U.S. Navy facilities.

<sup>3</sup> *Annual Report 1976*, Shipbuilders Council of America (Washington, D.C., 1977).



of Boilermakers, Iron Shipbuilders, Blacksmiths, Forgers and Helpers, and the Industrial Union of Marine and Shipbuilding Workers.

*Method of wage payment.* Almost all workers were paid on a time basis under formal systems (table 8). Approximately seven-tenths of the production workers were employed in yards that paid single rates for individual occupations and slightly less than three-tenths had formal range-of-rate plans within occupations. The few incentive workers reported—under piecework plans—were all employed in Atlantic Coast yards.

### Earnings

The 104,015 shipyard workers averaged \$5.66 an hour in September 1976 (table 1).<sup>4</sup> Individual earnings of 94 percent were between \$4 and \$7.50 an hour; the middle 50 percent of the workers in the array had rates between \$5.12 and \$6.29 (text table 1).

**Text table 1. Measures of central tendency of earnings in private shipbuilding and repairing, September 1976**

Location	Mean	Median	Middle (interquartile) range
United States <sup>1</sup> .....	\$5.66	\$5.67	\$5.12– \$6.29
Atlantic Coast .....	5.55	5.65	5.09– 6.06
Gulf Coast .....	5.26	5.39	4.70– 5.80
Great Lakes .....	5.56	5.55	4.94– 6.60
Pacific Coast .....	6.83	7.42	5.70– 7.48

<sup>1</sup> Includes data for workers in geographic locations not shown separately.

Earnings of shipbuilding workers were concentrated within a relatively narrow band compared to other industries surveyed by the Bureau of Labor Statistics. The index of dispersion (middle range divided by the median)—21 for shipbuilding—was below the index for all but about a half dozen of the 70 industries in the Bureau's wage program. Major factors contributing to clustering of earnings in this industry are the predominance of single rate pay systems, the highly unionized work force, and the relatively small wage differences among occupations.

Tables 3 thru 7 provide occupational distributions of workers by hourly earnings for the United States and the four selected ports. Within the same occupation and region, pay rates were highly concentrated. For example, 1,376 of the 2,563 shipfitters at Gulf ports earned between \$6.40 and \$6.60 an hour. Moreover, on the Pacific Coast, job earnings were grouped principally within two intervals—\$5.60 to \$5.80 and \$7.40 to \$7.60—regardless of occupation.

The 35 occupations selected to represent worker skills and manufacturing operations in the industry accounted for three-fifths of the production work force. Nationwide, averages among these jobs ranged from \$4.34 for guards to \$6.58 for loft workers—who lay out ship plans and construct patterns, such as templates and molds. Shipfitters (8,514), who lay out, fabricate, and brace metal structural parts in position within the hull of the ship, made up the largest group of workers studied and averaged \$6.09 an hour (table 2).

Among regions, averages were almost always highest on the Pacific Coast. Differences in occupational earnings between the Great Lakes, Gulf Coast, and Atlantic ports were slight and no consistent pattern could be found. Occupational averages in Pacific ports in most cases exceeded those in other ports by 20 to 30 percent.

Nationwide averages for craft or skilled jobs associated with direct production ranged from \$5.99 an hour for marine electricians to \$6.58 for loft workers. Lower averages were recorded for most lesser skilled "class B" jobs; for example, 5,683 class B hand welders averaged \$5.72 an hour. Painters (rough) and grinders-chippers—two semiskilled occupations—averaged \$5.96 and \$5.90 an hour, respectively.

Averages for the seven skilled maintenance occupations presented in table 2 ranged from \$6.18 an hour for tool-and-die makers to \$5.65 for carpenters. The 583 electricians, the most populous job studied in the maintenance group, averaged \$5.81 an hour. Maintenance trades-helpers earned \$4.90 an hour.

Crane operator, was the predominant material movement and service job studied, averaged \$6.18 an hour. Electric bridge-traveling crane and gantry crane operators, accounting for 31 and 24 percent of the 1,712 operators, averaged \$6.00 an hour and \$6.15, respectively. Among other jobs in the material movement/service groups, averages ranged from \$5.80 for power truck operators to \$4.96 for janitors and \$4.34 for guards.

<sup>4</sup> Straight-time average hourly earnings of production workers in this bulletin differ in concept from the gross average hourly earnings published in the Bureau's monthly *Hours and Earnings* (\$6.07 in September 1976). Unlike the latter, the estimate presented here excludes premium pay for overtime and for work on weekends, holidays, and late shifts. Average earnings are calculated by summing individual hourly earnings and dividing by the number of individuals; in the monthly series, the sum of the hours reported by establishments in the industry is divided into the reported payroll totals.

The estimate of the number of production workers within the scope of the study is intended only as a general guide to the size and composition of the labor force included in the survey. It differs from estimates published in the monthly series (132,200 in September 1976) in part because it excludes establishments employing fewer than 250 workers. The advance planning necessary to make the survey required the use of lists of establishments assembled considerably in advance of data collection. Thus, establishments new to the industry are omitted, as are establishments originally classified in the shipbuilding and repairing industry, but found in other industries at the time of the survey. Also omitted are shipyards classified incorrectly in other industries at the time the lists were compiled.

### Establishment practices and supplementary wage benefits

Data were also obtained on certain establishment practices and supplementary wage benefits for production workers, including work schedules, shift differentials, hazard pay, sea-trial pay, paid holidays, paid vacations, and specified health, insurance, and retirement plans.

*Work schedules.* Ninety-four percent of the production workers were in yards where work schedules of 40 hours were predominant (table 9). The remaining 6 percent, employed in Gulf Coast yards, had longer schedules.

*Shift provisions and practices.* Virtually all production workers were in establishments with late-shift provisions which called for differential payments (table 10). Only one-fifth of the workers, however, were actually on second shifts in September 1976 and slightly less than one-tenth had third- or other late-shift assignments (table 11). Shift differentials varied by region. Cents-per-hour additions to first-shift rates were most prevalent at Gulf and Great Lakes ports whereas percent differentials were popular on the Atlantic and Pacific Coasts. Nationwide, about three-tenths of the workers on second shifts received a 7-percent premium above day-shift rates and another three-tenths were paid a 15 or 20 cent differential; similar provisions typically covered third- or other late-shift work.

*Hazard and sea-trial pay.* Nearly two-thirds of the workers were in yards that had formal provisions for hazard pay and for sea-trial pay (tables 12 and 14). But only 2 percent of the workers were granted such hazard pay during September 1976 (table 13), while only one yard actually provided sea-trial pay during the payroll period studied.

*Paid holidays.* Nearly all shipyards provided paid holidays, usually 10 or 11 days a year (table 15). Among the regions, the most popular provisions were 11 days on the Atlantic Coast, 10 days on the Gulf Coast, 9 days on the Great Lakes, and 8 days on the Pacific Coast.

*Paid vacations.* All shipyards granted paid vacations, usually 1 week of pay after 1 year of service, 2 weeks after 3 years, at

least 3 weeks after 10 years, and at least 4 weeks after 25 years (table 16). Vacation schedules varied among regions, especially after longer periods of service. After 25 years, for example, almost all workers on the Pacific Coast and about three-fourths on the Gulf Coast received under 4 weeks whereas 4 weeks or more applied to at least one-half in Atlantic and Great Lakes ports.

*Health, insurance, and retirement plans.* Life, hospitalization, surgical, basic medical, and major medical insurance were provided to over nine-tenths of the shipyard workers (table 17). For a majority of the workers, employers financed the entire cost of these plans. Employers also provided accidental death and dismemberment insurance to nearly two-thirds of their workers and sickness and accident insurance to about seven-tenths. There was little regional variation in the incidence of benefits, except for accidental death and dismemberment, and sickness and accident insurance. Coverage of accidental death and dismemberment insurance ranged from nearly one-half the workers on the Atlantic Coast to over nine-tenths on the Pacific. At least three-fifths benefited from employer-sponsored sickness and accident insurance in each region except the Pacific Coast.

Ninety-five percent of the production workers were covered by pension plans in addition to Federal social security. In three of the four ports shown separately, almost all plans were paid for entirely by the yard; employer-financed plans covered only one-fourth of the Gulf Coast workers under pension plans.

*Other selected benefits.* Nine-tenths of the production workers were employed in yards that had formal provisions for call-in and report-in pay (table 18).<sup>5</sup> Other widespread provisions included paid jury-duty leave—available to approximately three-fourths of the workers—and cost-of-living pay adjustments—covering six-tenths. About one-third of the workers were in establishments that had provisions for dental insurance and for paid funeral leave.

<sup>5</sup> For definition of items, see appendix B.

**Table 1. Earnings distribution**

(Percent distribution of production and related workers in shipyards by average straight-time hourly earnings,<sup>1</sup> United States and selected ports, September 1976)

Hourly earnings	United States	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
NUMBER OF WORKERS.....	104,015	46,561	32,700	2,932	17,372
AVERAGE HOURLY EARNINGS <sup>2</sup> .....	\$5.66	\$5.55	\$5.26	\$5.56	\$6.83
TOTAL.....	100.0	100.0	100.0	100.0	100.0
UNDER \$3.60.....	2.8	0.4	6.9	0.8	0.3
\$3.60 AND UNDER \$3.70.....	.3	-	.6	.2	-
\$3.70 AND UNDER \$3.80.....	.3	(*)	.6	1.9	-
\$3.80 AND UNDER \$3.90.....	.8	.1	2.0	2.3	-
\$3.90 AND UNDER \$4.00.....	.3	.1	.5	1.3	.1
\$4.00 AND UNDER \$4.10.....	1.4	.9	2.9	.4	-
\$4.10 AND UNDER \$4.20.....	2.5	4.1	1.9	.2	-
\$4.20 AND UNDER \$4.30.....	1.0	(*)	2.5	1.6	-
\$4.30 AND UNDER \$4.40.....	1.4	2.2	.8	2.6	-
\$4.40 AND UNDER \$4.50.....	2.1	1.5	4.0	2.1	-
\$4.50 AND UNDER \$4.60.....	1.6	2.1	1.3	2.3	.2
\$4.60 AND UNDER \$4.70.....	2.4	4.7	.9	2.1	-
\$4.70 AND UNDER \$4.80.....	1.2	1.2	2.0	2.1	-
\$4.80 AND UNDER \$4.90.....	2.6	2.9	2.3	3.4	1.2
\$4.90 AND UNDER \$5.00.....	2.4	2.8	1.9	4.0	1.6
\$5.00 AND UNDER \$5.10.....	2.1	2.2	3.2	1.5	.1
\$5.10 AND UNDER \$5.20.....	3.0	3.6	2.6	11.1	.5
\$5.20 AND UNDER \$5.30.....	3.2	4.6	3.3	1.3	.2
\$5.30 AND UNDER \$5.40.....	4.6	1.7	10.9	3.3	1.4
\$5.40 AND UNDER \$5.50.....	3.7	4.0	5.5	1.9	.6
\$5.50 AND UNDER \$5.60.....	5.1	8.1	3.2	7.4	.6
\$5.60 AND UNDER \$5.70.....	8.6	5.6	9.0	6.5	18.2
\$5.70 AND UNDER \$5.80.....	6.9	10.2	6.2	2.7	1.2
\$5.80 AND UNDER \$5.90.....	3.4	3.9	3.5	1.9	2.1
\$5.90 AND UNDER \$6.00.....	2.5	2.8	1.9	1.0	1.5
\$6.00 AND UNDER \$6.10.....	5.1	9.4	1.7	1.4	.4
\$6.10 AND UNDER \$6.20.....	1.4	2.2	.3	.2	.8
\$6.20 AND UNDER \$6.30.....	3.6	7.1	.2	4.1	.3
\$6.30 AND UNDER \$6.40.....	2.0	2.6	1.4	1.6	.2
\$6.40 AND UNDER \$6.50.....	5.3	4.0	10.3	.4	.3
\$6.50 AND UNDER \$6.60.....	1.7	.7	4.3	1.3	(*)
\$6.60 AND UNDER \$6.70.....	.9	1.4	.2	.2	.2
\$6.70 AND UNDER \$6.80.....	1.3	.5	.9	24.7	.1
\$6.80 AND UNDER \$6.90.....	.2	.2	.1	-	(*)
\$6.90 AND UNDER \$7.00.....	.1	.3	(*)	-	-
\$7.00 AND UNDER \$7.10.....	.1	.2	(*)	-	.1
\$7.10 AND UNDER \$7.20.....	1.0	.1	(*)	-	5.3
\$7.20 AND UNDER \$7.30.....	.4	.4	(*)	-	1.3
\$7.30 AND UNDER \$7.40.....	(*)	(*)	(*)	-	(*)
\$7.40 AND UNDER \$7.50.....	8.9	.1	-	-	53.3
\$7.50 AND UNDER \$7.60.....	.3	.2	(*)	-	1.6
\$7.60 AND UNDER \$7.70.....	.4	.1	-	-	2.1
\$7.70 AND UNDER \$7.80.....	.6	(*)	.1	-	3.6
\$7.80 AND UNDER \$7.90.....	.1	.1	(*)	-	.1
\$7.90 AND UNDER \$8.00.....	.1	(*)	(*)	-	.2
\$8.00 AND OVER.....	.4	.7	.1	-	.5

<sup>1</sup> Includes data for ports in addition to those shown separately.

<sup>2</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

\* Less than 0.05 percent

NOTE: Because of rounding, sums of individual items may not equal 100.

**Table 2. Occupational averages**

(Number and average straight-time hourly earnings of workers in selected occupations in shipyards, United States and selected ports, September 1976)

Occupation	United States <sup>1</sup>		Atlantic Coast		Gulf Coast		Great Lakes		Pacific Coast	
	Workers	Average hourly earnings <sup>2</sup>	Workers	Average hourly earnings <sup>2</sup>	Workers	Average hourly earnings <sup>2</sup>	Workers	Average hourly earnings <sup>2</sup>	Workers	Average hourly earnings <sup>2</sup>
<b>PRODUCTION</b>										
BOILERMAKERS.....	779	\$6.46	247	\$6.21	-	-	-	-	342	\$7.19
ELECTRONICS TECHNICIANS										
CLASS A.....	148	6.27	47	6.03	-	-	-	-	22	7.73
GRINDERS-CHIPPERS.....	1,537	5.90	980	5.84	-	-	-	-	223	6.51
INSPECTORS										
CLASS A.....	90	6.26	-	-	25	\$6.80	-	-	-	-
CLASS B.....	876	6.08	499	6.12	-	-	-	-	-	-
CLASS C.....	303	5.42	-	-	-	-	-	-	-	-
LOFT WORKERS.....	264	6.58	79	6.15	59	6.14	15	\$5.91	86	7.56
MACHINE-TOOL OPERATORS, PRODUCTION										
CLASS A.....	922	6.06	-	-	-	-	-	-	-	-
CLASS B.....	324	5.18	142	5.11	-	-	-	-	-	-
MACHINISTS, PRODUCTION.....	1,160	6.10	692	5.91	217	6.15	23	6.28	143	6.82
MARINE ELECTRICIANS.....	4,161	5.99	1,844	5.77	-	-	89	6.13	679	7.17
MARINE MACHINISTS.....	3,310	6.05	1,781	5.78	702	5.65	40	6.35	742	7.04
MARINE PIPEFITTERS.....	4,953	6.13	2,211	5.75	1,024	5.82	82	6.14	1,552	6.88
MARINE RIGGERS.....	2,999	6.20	1,641	5.82	418	5.72	-	-	819	7.19
PAINTERS.....	3,377	5.96	1,575	5.76	900	5.50	75	5.52	765	7.00
POWER-SHEAR OPERATORS.....	51	6.11	23	6.23	-	-	-	-	-	-
SHEET-METAL WORKERS.....	2,514	6.04	-	-	528	5.71	20	5.97	517	7.05
SHIPFITTERS.....	8,514	6.09	2,851	5.90	2,563	6.10	-	-	1,803	6.88
SHIPWRIGHTS.....	1,961	6.11	864	5.69	514	5.74	-	-	468	7.27
WELDERS, HAND										
CLASS A.....	8,198	6.17	3,628	6.12	3,130	6.13	-	-	343	7.57
CLASS B.....	5,683	5.72	1,028	5.44	1,393	5.25	166	4.93	2,289	6.55
WELDERS, MACHINE (ARC OR GAS).....	2,623	6.39	782	6.10	1,019	5.79	-	-	822	7.41
WELDERS, MACHINE (RESISTANCE)										
CLASS A.....	218	6.45	-	-	-	-	-	-	-	-
<b>MAINTENANCE</b>										
CARPENTERS, MAINTENANCE.....	262	5.65	78	5.93	-	-	-	-	-	-
ELECTRICIANS, MAINTENANCE.....	583	5.81	395	5.87	-	-	-	-	-	-
HELPERS, MAINTENANCE TRADES.....	166	4.90	113	5.30	-	-	-	-	-	-
MACHINE-TOOL OPERATORS (TOOLROOM) ..	146	5.87	-	-	-	-	-	-	-	-
MACHINISTS, MAINTENANCE.....	297	6.17	139	5.92	70	5.66	-	-	84	7.02
MECHANICS, MAINTENANCE.....	406	5.88	273	5.94	-	-	-	-	-	-
PIPEFITTERS, MAINTENANCE.....	238	5.78	184	5.84	-	-	-	-	-	-
TOOL AND DIE MAKERS.....	29	6.18	-	-	-	-	-	-	-	-
<b>MATERIAL MOVEMENT AND SERVICE</b>										
CRANE OPERATORS.....	1,712	6.18	760	6.04	517	5.92	52	5.99	248	7.49
ELECTRIC BRIDGE (TRAVELING).....	539	6.00	307	5.93	-	-	-	-	74	7.58
GANTRY CRANE.....	403	6.15	193	6.01	124	5.83	-	-	64	7.24
MOBILE (TRUCK) CRANE.....	236	6.12	43	6.22	149	5.95	-	-	31	7.36
OTHER (INCLUDING COMBINATION OF TYPES).....	534	6.42	237	6.18	-	-	52	5.99	79	7.65
GUARDS.....	731	\$4.34	380	\$4.84	258	\$4.11	-	-	-	-
JANITORS, PORTERS, OR CLEANERS.....	689	4.96	475	5.13	116	4.37	-	-	41	\$5.10
LABORERS, MATERIAL HANDLING.....	758	5.16	444	5.22	164	3.37	-	-	-	-
POWER TRUCK OPERATORS.....	467	5.80	170	5.43	-	-	-	-	207	6.62
FORKLIFT OPERATORS.....	436	5.80	-	-	-	-	-	-	206	6.62
POWER-TRUCK OPERATORS(OTHER THAN FORKLIFT).....	31	5.86	30	5.81	-	-	-	-	-	-
TRUCKDRIVERS.....	462	5.59	165	5.66	207	4.99	-	-	63	7.34

<sup>1</sup> Includes data for ports in addition to those shown separately.

<sup>2</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

NOTE: Dashes indicate no data reported or data do not meet publication criteria.

**Table 3. Occupational earnings: United States**

(Number and average straight-time hourly earnings<sup>1</sup> of workers in selected occupations in shipyards, United States, September 1976)

Occupation	Number of workers	Average hourly earnings <sup>1</sup>	NUMBER OF WORKERS RECEIVING STRAIGHT-TIME HOURLY EARNINGS (IN DOLLARS) OF--																								
			UNDER 3.60	3.60 AND UNDER 3.80	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60	7.80	8.00 AND OVER	
<b>PRODUCTION</b>																											
BOILERMAKERS.....	779	\$6.46	-	-	-	-	-	-	-	110	8	27	154	10	74	20	54	5	-	4	2	297	-	-	-	-	14
ELECTRONICS TECHNICIANS																											
CLASS A.....	148	6.27	-	-	-	-	-	-	-	-	-	2	-	24	79	20	-	1	-	-	-	-	-	21	1	-	-
GRINDERS-CHIPPERS.....	1,537	5.90	30	-	-	-	-	2	20	57	19	18	338	338	42	186	260	77	28	2	-	4	114	-	-	-	-
INSPECTORS																											
CLASS A.....	90	6.26	-	-	-	-	-	-	-	1	-	-	-	-	1	63	1	5	8	1	-	3	6	1	-	-	-
CLASS B.....	876	6.08	-	-	-	-	-	-	-	8	12	3	26	562	13	31	70	96	6	10	2	37	-	-	-	-	-
CLASS C.....	303	5.42	-	-	-	2	2	21	25	12	21	181	4	23	5	1	2	3	1	-	-	-	-	-	-	-	-
LOFT WORKERS.....	264	6.58	-	-	-	-	-	-	-	1	3	9	17	23	36	26	25	8	25	12	2	1	8	36	32	-	-
MACHINE-TOOL OPERATORS, PRODUCTION																											
CLASS A.....	922	6.06	-	-	-	-	-	-	-	3	-	216	179	13	180	203	21	2	-	-	-	104	-	-	-	-	1
CLASS B.....	324	5.18	-	-	-	3	-	3	33	135	148	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MACHINISTS, PRODUCTION.....	1,160	6.10	-	-	3	-	-	-	5	19	16	89	378	136	57	63	199	79	-	1	-	95	-	-	-	-	-
MARINE ELECTRICIANS.....	4,161	5.99	-	-	-	-	-	-	130	152	405	984	539	167	325	294	511	60	1	-	5	576	2	-	10	-	-
MARINE MACHINISTS.....	3,310	6.05	-	-	3	-	9	3	131	155	530	341	421	172	277	285	328	61	-	-	-	588	-	-	-	-	6
MARINE PIPEFITTERS.....	4,953	6.13	-	-	3	6	9	-	199	200	578	388	990	221	309	425	462	56	1	2	4	1086	2	2	10	-	-
MARINE RIGGERS.....	2,999	6.20	9	-	3	-	-	-	60	60	281	235	604	151	283	296	238	69	-	-	-	710	-	-	-	-	-
PAINTERS.....	3,377	5.96	42	28	9	-	30	26	13	79	115	566	385	470	277	205	199	300	59	12	3	-	484	72	-	3	-
POWER-SHEAR OPERATORS.....	51	6.11	-	-	2	-	-	-	-	1	2	-	1	2	2	5	19	9	4	-	-	-	-	-	-	-	-
SHRETT-METAL WORKERS.....	2,514	6.04	-	-	-	-	-	-	96	100	397	164	468	42	293	286	215	12	1	2	5	409	-	-	-	4	-
SHIPFITTERS.....	8,514	6.09	82	23	6	54	31	50	41	401	248	569	549	1523	514	567	586	1588	280	23	4	4	1291	20	24	36	-
SHIPWRIGHTS.....	1,961	6.11	-	-	-	-	-	-	-	54	82	207	224	445	214	61	71	125	56	-	-	409	-	-	13	-	-
WELDERS, HAND																											
CLASS A.....	8,198	6.17	13	27	30	10	3	-	89	7	589	453	2021	363	735	782	1825	481	48	48	123	209	159	10	173	-	-
CLASS B.....	5,683	5.72	177	41	44	100	178	77	71	66	627	441	703	1573	133	223	59	-	-	-	-	1170	-	-	-	-	-
WELDERS, MACHINE (ARC OR GAS).....	2,623	6.39	-	-	-	-	-	-	-	-	12	-	376	577	180	145	375	74	45	2	1	18	813	1	-	4	-
WELDERS, MACHINE (RESISTANCE)																											
CLASS A.....	218	6.45	-	-	-	-	-	-	-	4	-	6	5	18	15	3	102	-	-	-	19	46	-	-	-	-	-
<b>MAINTENANCE</b>																											
CARPENTERS, MAINTENANCE.....	262	5.65	-	-	30	18	12	3	3	17	20	20	21	16	15	27	6	1	-	-	-	44	-	-	-	-	-
ELECTRICIANS, MAINTENANCE.....	583	5.81	1	-	3	-	-	-	7	5	10	168	147	76	69	46	27	13	-	-	-	11	-	-	-	-	-
HELPERS, MAINTENANCE TRADES.....	166	4.90	21	12	6	1	5	5	12	18	29	-	23	-	8	20	-	-	-	6	-	-	-	-	-	-	-
MACHINE-TOOL OPERATORS (TOOLROOM).....	146	5.87	-	-	-	-	-	-	50	8	-	17	13	-	12	7	2	2	-	-	-	35	-	-	-	-	-
MACHINISTS, MAINTENANCE.....	297	6.17	-	-	-	-	-	-	-	4	31	7	102	19	36	19	11	3	-	-	-	65	-	-	-	-	-
MECHANICS, MAINTENANCE.....	406	5.88	-	-	-	6	-	1	14	20	18	73	61	26	35	67	49	34	-	-	-	2	-	-	-	-	-
PIPEFITTERS, MAINTENANCE.....	238	5.78	-	-	-	-	-	-	5	4	35	38	61	24	30	21	16	3	-	-	-	1	-	-	-	-	-
TOOL AND DIE MAKERS.....	29	6.18	-	-	-	-	-	-	-	-	1	1	-	13	-	-	10	4	-	-	-	-	-	-	-	-	-
<b>MATERIAL MOVEMENT AND SERVICE</b>																											
CRANE OPERATORS.....	1,712	6.18	9	1	7	-	21	7	40	34	115	151	210	90	266	134	228	185	23	-	1	100	65	1	24	-	-
ELECTRIC BRIDGE (TRAVELING).....	539	6.00	6	-	4	-	18	-	25	9	61	67	66	19	89	32	12	55	-	-	-	57	18	1	-	-	-
GANTRY CRANE.....	403	6.15	-	-	-	-	-	-	2	3	7	60	71	55	76	27	42	24	8	-	-	20	-	-	8	-	-
MOBILE (TRUCK) CRANE.....	236	6.12	3	1	3	-	3	-	8	-	36	3	22	12	14	24	60	22	-	-	9	16	-	-	-	-	-
OTHER (INCLUDING COMBINATION OF TYPES).....	534	6.42	-	-	-	-	-	7	5	22	11	21	51	4	87	51	114	84	15	-	1	14	31	-	16	-	-
GUARDS.....	731	4.34	171	14	3	4	1	17	133	196	99	36	22	1	24	-	10	-	-	-	-	-	-	-	-	-	-
JANITORS, PORTERS, OR CLEANERS.....	689	4.96	17	7	27	22	74	39	93	105	41	50	-	177	10	7	-	-	-	-	20	-	-	-	-	-	-
LABORERS, MATERIAL HANDLING.....	758	5.16	131	2	5	6	2	1	142	14	113	-	60	126	-	16	-	-	-	-	140	-	-	-	-	-	-
POWER TRUCK OPERATORS.....	467	5.80	-	3	6	-	1	64	2	86	1	2	105	14	18	24	16	5	-	-	-	120	-	-	-	-	-
FORKLIFT OPERATORS.....	436	5.80	-	3	6	-	1	64	2	86	1	-	89	14	18	21	12	-	-	-	-	119	-	-	-	-	-
POWER-TRUCK OPERATORS (OTHER THAN FORKLIFT).....	31	5.86	-	-	-	-	-	-	-	-	-	2	16	-	3	4	5	-	-	-	-	1	-	-	-	-	-
TRUCK DRIVERS.....	462	5.59	6	8	-	3	1	36	44	9	11	67	84	75	12	39	4	5	-	-	-	52	-	-	6	-	-

<sup>1</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

**Table 4. Occupational earnings: Atlantic Coast**

(Number and average straight-time earnings<sup>1</sup> of workers in shipyards in selected occupations, September 1976)

Occupation	Number of workers	Average hourly earnings <sup>1</sup>	NUMBER OF WORKERS RECEIVING STRAIGHT-TIME HOURLY EARNINGS (IN DOLLARS) OF--																											
			UND<R 3.60	3.60 AND UNDER 3.80	3.80 4.00	4.00 4.20	4.20 4.40	4.40 4.60	4.60 4.80	4.80 5.00	5.00 5.20	5.20 5.40	5.40 5.60	5.60 5.80	5.80 6.00	6.00 6.20	6.20 6.40	6.40 6.60	6.60 6.80	6.80 7.00	7.00 7.20	7.20 7.40	7.40 7.60	7.60 7.80	7.80 8.00	8.00 AND OVER				
<b>PRODUCTION</b>																														
BOILERMAKERS.....	247	\$6.21	-	-	-	-	-	-	-	-	2	8	25	42	10	74	20	44	2	-	4	2	-	-	-	-	-	-	14	
ELECTRONICS TECHNICIANS																														
CLASS A.....	47	6.03	-	-	-	-	-	-	-	-	-	-	2	-	24	-	20	-	1	-	-	-	-	-	-	-	-	-		
GRINDERS-CHIPPERS.....	980	5.87	-	-	-	-	-	-	-	11	57	19	18	225	127	39	154	259	63	2	2	-	4	-	-	-	-	-		
INSECTORS																														
CLASS B.....	499	6.12	-	-	-	-	-	-	-	-	-	1	2	3	285	11	31	56	96	6	6	-	-	-	-	-	-	-		
LOFT WORKERS.....	79	6.15	-	-	-	-	-	-	-	-	-	1	4	9	1	9	24	8	6	13	4	-	-	-	-	-	-	-		
MACHINE-TOOL OPERATORS, PRODUCTION																														
CLASS B.....	142	5.11	-	-	-	-	-	-	-	24	82	34	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MACHINISTS, PRODUCTION.....	692	5.91	-	-	-	-	-	-	-	-	11	12	76	301	66	57	66	81	22	-	-	-	-	-	-	-	-	-		
MARINE ELECTRICIANS.....	1,844	5.77	-	-	-	-	-	-	-	130	141	148	327	279	48	313	264	157	19	-	-	2	2	2	2	2	10	6		
MARINE MACHINISTS.....	1,781	5.78	-	-	-	-	-	-	-	131	137	167	314	189	76	277	274	170	36	-	-	-	4	-	-	-	-	-		
MARINE PIPEFITTERS.....	2,211	5.75	-	-	-	-	-	-	-	182	178	186	355	404	85	263	390	138	8	-	2	4	2	2	2	10	3			
MARINE RIGGERS.....	1,641	5.82	-	-	-	-	-	-	-	49	59	88	225	436	130	283	246	124	1	-	-	-	-	-	-	-	-	-		
PAINTERS.....	1,575	5.76	-	-	-	-	20	5	-	57	74	93	362	343	99	205	154	116	29	12	3	-	-	-	-	-	-	-		
POWER-SHAFT OPERATORS.....	23	6.23	-	-	-	-	-	-	-	-	2	-	1	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-		
SHIPFITTERS.....	2,851	5.90	-	-	-	-	-	-	-	127	149	152	473	702	10	482	348	192	76	16	4	4	36	20	24	36	-			
SHIPWRIGHTS.....	864	5.69	-	-	-	-	-	-	-	54	75	33	209	198	140	49	45	57	-	-	-	-	-	-	-	-	-	-		
WELDERS, HAND																														
CLASS A.....	3,628	6.12	-	-	-	-	-	-	-	-	-	368	414	971	127	496	441	295	108	30	45	123	25	-	10	173	-			
CLASS B.....	1,028	5.44	-	-	-	-	-	-	-	223	228	209	228	130	-	10	-	-	-	-	-	-	-	-	-	-	-	-		
WELDERS, MACHINE (ARC OR GAS).....	782	6.10	-	-	-	-	-	-	-	-	3	-	-	354	15	79	229	74	2	2	1	18	-	1	-	4	-			
<b>MAINTENANCE</b>																														
CARPENTERS, MAINTENANCE.....	78	5.93	-	-	-	-	-	-	-	-	2	6	16	13	-	12	23	6	-	-	-	-	-	-	-	-	-	-		
ELECTRICIANS, MAINTENANCE.....	395	5.87	-	-	-	-	-	-	-	7	4	10	72	92	66	66	38	27	13	-	-	-	-	-	-	-	-	-		
HELPERS, MAINTENANCE TRADES.....	113	5.30	-	-	-	1	2	5	11	15	28	-	23	-	8	20	-	-	-	-	-	-	-	-	-	-	-	-		
MACHINISTS, MAINTENANCE.....	139	5.92	-	-	-	-	-	-	-	-	4	1	7	62	-	36	19	7	3	-	-	-	-	-	-	-	-	-		
MECHANICS, MAINTENANCE.....	273	5.94	-	-	-	-	-	-	-	5	13	12	59	21	26	35	55	19	28	-	-	-	-	-	-	-	-	-		
PIPEFITTERS, MAINTENANCE.....	184	5.84	-	-	-	-	-	-	-	4	4	4	36	44	24	30	19	16	3	-	-	-	-	-	-	-	-	-		
<b>MATERIAL MOVEMENT AND SERVICE</b>																														
CRANE OPERATORS.....	780	6.04	-	-	-	-	-	-	7	24	9	13	77	122	52	215	86	20	135	15	-	1	1	-	1	-	2			
ELECTRIC BRIDGE (TRAVELING).....	307	5.93	-	-	-	-	-	-	19	9	1	67	44	12	70	24	6	53	-	-	-	1	-	-	1	-	-			
GANTRY CRANE.....	193	6.01	-	-	-	-	-	-	-	-	6	2	60	39	45	10	9	22	-	-	-	-	-	-	-	-	-	-		
MOBILE (TRUCK) CRANE.....	43	6.22	-	-	-	-	-	-	-	-	6	-	2	-	13	6	-	16	-	-	-	-	-	-	-	-	-	-		
OTHER (INCLUDING COMBINATION OF TYPES).....	237	6.18	-	-	-	-	-	-	7	5	-	8	16	1	87	46	5	44	15	-	-	1	-	-	-	-	2			
GUARDS.....	380	4.84	21	-	-	-	-	8	57	143	98	34	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
JANITORS, PORTERS, OR CLEANERS.....	475	5.13	1	2	3	18	12	12	93	103	20	26	-	177	8	-	-	-	-	-	-	-	-	-	-	-	-	-		
LABORERS, MATERIAL HANDLING.....	444	5.22	-	-	5	-	-	-	142	13	82	-	60	126	-	16	-	-	-	-	-	-	-	-	-	-	-	-		
POWER TRUCK OPERATORS.....	170	5.43	-	-	-	-	-	3	2	85	-	2	17	-	16	24	16	5	-	-	-	-	-	-	-	-	-	-		
POWER-TRUCK OPERATORS (OTHER THAN FORKLIFT).....	30	5.61	-	-	-	-	-	-	-	-	-	2	16	-	-	3	4	5	-	-	-	-	-	-	-	-	-	-		
TRUCK DRIVERS.....	165	5.66	-	-	-	-	-	2	1	6	4	12	46	46	6	39	3	-	-	-	-	-	-	-	-	-	-	-		

<sup>1</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

<sup>2</sup> Includes data for workers in classifications in addition to those shown separately.

**Table 5. Occupational earnings: Gulf Coast**

(Number and average straight-time hourly earnings<sup>1</sup> of workers in shipyards in selected occupations, September 1976)

Occupation	Number of workers	Average hourly earnings <sup>1</sup>	NUMBER OF WORKERS RECEIVING STRAIGHT-TIME HOURLY EARNINGS (IN DOLLARS) OF--																							
			3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60			
			UNDER	AND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>PRODUCTION</b>																										
INSPECTORS																										
CLASS A.....	25	\$6.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOFT WORKERS.....	59	6.14	-	-	-	-	-	-	-	-	-	-	-	-	-	22	6	2	13	2	8	6	-	-	-	6
MACHINISTS, PRODUCTION.....	217	6.15	-	-	-	3	-	-	-	-	-	-	3	3	26	62	-	5	115	-	-	-	-	-	-	-
MARINE MACHINISTS.....	702	5.65	-	-	-	3	-	9	3	-	9	362	17	74	96	-	5	123	1	-	-	-	-	-	-	-
MARINE PIPEFITTERS.....	1,024	5.82	-	-	-	3	6	9	-	-	18	383	16	100	125	45	13	291	15	-	-	-	-	-	-	-
MARINE RIGGERS.....	418	5.72	9	-	3	-	-	-	-	-	-	192	8	59	21	-	10	114	2	-	-	-	-	-	-	-
PAINTERS.....	900	5.50	39	24	6	-	6	21	9	9	15	462	7	32	46	-	27	182	15	-	-	-	-	-	-	-
SHEET-METAL WORKERS.....	528	5.71	-	-	-	-	-	-	-	-	-	296	61	38	-	-	2	131	-	-	-	-	-	-	-	-
SHIPFITTERS.....	2,563	6.10	-	3	-	54	3	15	3	3	51	339	2	155	308	84	88	1376	79	-	-	-	-	-	-	-
SHIPWRIGHTS.....	514	5.74	-	-	-	-	-	-	-	-	-	173	-	-	200	51	12	10	68	-	-	-	-	-	-	-
WELDERS, HAND																										
CLASS A.....	3,130	6.13	-	-	-	-	-	-	-	-	-	179	-	968	146	235	60	1470	63	6	3	-	-	-	-	-
CLASS B.....	1,393	5.25	-	-	6	33	24	54	42	12	323	177	493	226	3	-	-	-	-	-	-	-	-	-	-	-
WELDERS, MACHINE (ARC OR GAS).....	1,019	5.79	-	-	-	-	-	-	-	-	-	-	-	376	223	165	66	146	-	43	-	-	-	-	-	-
<b>MAINTENANCE</b>																										
MACHINISTS, MAINTENANCE.....	70	5.66	-	-	-	-	-	-	-	-	-	-	30	-	21	15	-	-	4	-	-	-	-	-	-	-
<b>MATERIAL MOVEMENT AND SERVICE</b>																										
CRANE OPERATORS.....	517	5.92	9	-	-	-	-	3	-	3	5	99	65	67	25	23	18	180	20	-	-	-	-	-	-	-
GANTRY CRANE <sup>2</sup> .....	124	5.83	-	-	-	-	-	-	-	-	3	-	56	11	16	16	-	20	2	-	-	-	-	-	-	-
MOBILE (TRUCK) CRANE.....	149	5.95	3	-	-	-	-	3	-	3	-	30	3	19	9	1	18	54	6	-	-	-	-	-	-	-
GUARDS.....	258	4.11	104	9	3	3	-	7	75	53	1	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
JANITORS, PORTERS, OR CLEANERS.....	116	4.37	4	-	2	3	60	25	-	-	21	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LABORERS, MATERIAL HANDLING.....	164	3.37	129	-	-	4	-	-	-	-	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRUCKDRIVERS.....	207	4.99	6	5	-	3	1	32	43	2	7	54	34	20	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

<sup>2</sup> Includes data for workers in classifications in addition to those shown separately.

**Table 6. Occupational earnings: Great Lakes**

(Number and average straight-time hourly earnings<sup>1</sup> of workers in shipyards by selected occupations, September 1976)

Occupations	Number of workers	Average hourly earnings <sup>1</sup>	NUMBER OF WORKERS RECEIVING STRAIGHT-TIME HOURLY EARNINGS (IN DOLLARS) OF--												
			4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60
			4.40	4.60	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80
<u>PRODUCTION</u>															
LOFT WORKERS.....	15	\$5.91	-	-	-	-	1	-	8	-	-	-	2	-	4
MACHINISTS, PRODUCTION.....	23	6.28	-	-	-	-	-	-	7	-	-	-	4	-	12
MARINE ELECTRICIANS.....	89	6.13	-	-	-	-	-	-	14	26	-	1	18	-	30
MARINE MACHINISTS.....	40	6.35	-	-	-	1	-	-	9	-	-	-	6	-	24
MARINE PIPEFITTERS.....	82	6.14	-	-	-	2	6	14	14	12	-	1	16	-	31
PAINTERS.....	75	5.52	4	-	4	3	23	6	14	3	1	-	3	-	14
SHEET-METAL WORKERS.....	20	5.97	-	-	-	-	-	-	12	-	-	-	1	-	7
WELDERS, HAND															
CLASS B.....	166	4.93	1	23	16	54	65	6	1	-	-	-	-	-	-
<u>MATERIAL MOVEMENT AND SERVICE</u>															
CRANE OPERATORS.....	52	5.99	-	-	-	-	20	-	3	-	3	-	2	-	24
OTHEE (INCLUDING COMBINATION OF TYPES).....	52	5.99	-	-	-	-	20	-	3	-	3	-	2	-	24

<sup>1</sup> Excludes premium pay for overtime and for work on week-ends, holidays, and late shifts.

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**Table 7. Occupational earnings: Pacific Coast**

(Number and average straight-time hourly earnings<sup>1</sup> of workers in shipyards by selected occupations, September 1976)

Occupation	Number of workers	Average hourly earnings <sup>1</sup>	Number of workers receiving straight-time hourly earnings (in dollars) of—														
			UNDER 5.40	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00	7.20	7.40	7.60	7.80	8.00 AND OVER
<b>PRODUCTION</b>																	
BOILERMAKERS.....	342	\$7.19	-	-	45	-	-	-	-	-	-	-	-	297	-	-	-
ELECTRONICS TECHNICIANS																	
CLASS A.....	22	7.73	-	-	-	-	-	-	-	-	-	-	-	-	21	1	-
GRINDERS-CHIPPERS.....	223	6.51	-	77	32	-	-	-	-	-	-	-	114	-	-	-	-
LOFT WORKERS.....	86	7.56	-	-	10	-	-	-	-	-	-	-	8	36	32	-	-
MACHINISTS, PRODUCTION.....	143	6.82	-	-	48	-	-	-	-	-	-	-	95	-	-	-	-
MARINE ELECTRICIANS.....	679	7.17	-	-	105	-	-	-	-	-	-	-	574	-	-	-	-
MARINE MACHINISTS.....	742	7.04	-	-	158	-	-	-	-	-	-	-	584	-	-	-	-
MARINE PIPEFITTERS.....	1,552	6.88	-	-	468	-	-	-	-	-	-	-	1084	-	-	-	-
MARINE RIGGERS.....	819	7.19	-	-	109	-	-	-	-	-	-	-	710	-	-	-	-
PAINTERS.....	765	7.00	-	-	117	-	-	-	-	-	-	-	484	72	-	-	-
SHEET-METAL WORKERS.....	517	7.05	-	-	109	-	-	-	-	-	-	-	408	-	-	-	-
SHIPFITTERS.....	1,803	6.88	-	-	548	-	-	-	-	-	-	-	1255	-	-	-	-
SHIPWRIGHTS.....	468	7.27	-	-	46	-	-	-	-	-	-	-	409	-	13	-	-
WELDERS, HAND																	
CLASS A.....	343	7.57	-	-	-	-	-	-	-	-	-	-	184	159	-	-	-
CLASS B.....	2,289	6.55	-	-	1119	-	-	-	-	-	-	-	1170	-	-	-	-
WELDERS, MACHINE (ARC OR GAS).....	822	7.41	9	-	-	-	-	-	-	-	-	-	813	-	-	-	-
<b>MAINTENANCE</b>																	
MACHINISTS, MAINTENANCE.....	84	7.02	-	-	19	-	-	-	-	-	-	-	65	-	-	-	-
<b>MATERIAL MOVEMENT AND SERVICE</b>																	
CRANE OPERATORS.....	248	7.49	-	-	20	-	15	-	19	-	8	-	99	65	-	22	-
ELECTRIC BRIDGE (TRAVELING).....	74	7.58	-	-	-	-	-	-	-	-	-	-	56	18	-	-	-
GANTRY CRANE.....	64	7.24	-	-	-	-	15	-	13	-	8	-	20	-	-	8	-
MOBILE (TRUCK) CRANE.....	31	7.36	-	-	-	-	-	-	6	-	-	-	9	16	-	-	-
OTHER (INCLUDING COMBINATION OF TYPES).....	79	7.65	-	-	20	-	-	-	-	-	-	-	14	31	-	14	-
JANITORS, PORTERS, OR CLEANERS.....	41	5.10	<sup>3</sup> 21	-	-	-	-	-	-	-	-	20	-	-	-	-	-
POWER TRUCK OPERATORS <sup>2</sup> .....	207	6.62	-	87	-	-	-	-	-	-	-	-	120	-	-	-	-
FORKLIFT OPERATORS <sup>2</sup> .....	206	6.62	-	87	-	-	-	-	-	-	-	-	119	-	-	-	-
TRUCKDRIVERS.....	63	7.34	-	4	-	1	-	-	-	-	-	-	52	-	6	-	-

<sup>1</sup> Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

<sup>2</sup> Includes data for workers in classifications in addition to those shown separately.

<sup>3</sup> Workers were distributed as follows: 4 at under \$3.60, and 17 at \$3.80 to \$4.00.

**Table 8. Method of wage payment**

(Percent of production workers in shipyards by method of wage payment, United States and selected ports, September, 1976)

METHOD OF WAGE PAYMENT <sup>1</sup>	UNITED STATES <sup>2</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
ALL WORKERS.....	100	100	100	100	100
TIME RATED WORKERS.....	98	95	100	100	100
FORMAL PLANS.....	97	95	98	100	100
SINGLE RATE.....	69	60	77	-	99
RANGE OF RATES.....	28	35	21	100	1
INDIVIDUAL RATES.....	1	-	2	-	-
INCENTIVE WORKERS.....	2	5	-	-	-
INDIVIDUAL PIECEWORK.....	1	2	-	-	-
GROUP PIECEWORK.....	1	3	-	-	-
INDIVIDUAL BONUS.....	-	-	-	-	-
GROUP BONUS.....	-	-	-	-	-

<sup>1</sup> For definition of method of wage payment, see Appendix B.

<sup>2</sup> Includes data for ports in addition to those shown separately.

NOTE: Because of rounding, sums of individual items may not equal totals.

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**Table 9. Scheduled weekly hours**

(Percent of production workers in shipyards by scheduled weekly hours, United States and selected ports, September 1976)

WEEKLY HOURS	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
ALL WORKERS.....	100	100	100	100	100
40 HOURS.....	94	100	81	100	100
44 HOURS.....	4	-	12	-	-
45 HOURS.....	1	-	5	-	-
47.5 HOURS.....	1	-	3	-	-

<sup>1</sup> Includes data for ports in addition to those shown separately.

NOTE: Because of rounding, individual items may not equal totals.

**Table 10. Shift differential provisions**

(Percent of production workers in shipyards by shift differential provisions,<sup>1</sup> United States and selected ports, September 1976)

SHIFT DIFFERENTIAL	UNITED STATES <sup>2</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
SECOND SHIFT					
WORKERS IN ESTABLISHMENTS HAVING					
SECOND-SHIFT PROVISIONS.....	99.7	99.3	100.0	100.0	100.0
WITH SHIFT DIFFERENTIAL.....	97.2	96.0	94.1	100.0	100.0
UNIFORM CENTS PER HOUR.....	49.0	37.6	79.8	100.0	.1
10 CENTS.....	2.1	-	2.7	-	-
12 CENTS.....	3.7	-	10.1	-	-
13 CENTS.....	.8	-	-	27.8	-
15 CENTS.....	7.4	3.1	13.2	25.6	-
20 CENTS.....	17.9	-	48.4	46.5	-
25 CENTS.....	1.7	-	5.4	-	-
30 CENTS.....	(3)	-	-	-	.1
OVER 30 CENTS.....	15.4	34.5	-	-	-
UNIFORM PERCENTAGE.....	32.3	60.3	2.4	-	27.2
3 PERCENT.....	.3	.8	-	-	-
6 PERCENT.....	.7	-	2.4	-	-
7 PERCENT.....	26.7	59.6	-	-	-
10 PERCENT.....	4.5	-	-	-	27.2
FULL DAYS PAY FOR REDUCED HOURS.....	3.6	-	12.0	-	-
OTHER FORMAL PAID DIFFERENTIAL.....	12.2	-	-	-	72.8
WITH NO SHIFT DIFFERENTIAL.....	2.4	1.3	5.9	-	-
THIRD OR OTHER LATE SHIFT					
WORKERS IN ESTABLISHMENTS HAVING					
THIRD- OR OTHER LATE-SHIFT PROVISIONS....	92.4	97.2	82.2	74.4	99.9
WITH SHIFT DIFFERENTIAL.....	92.4	97.2	82.2	74.4	99.9
UNIFORM CENTS PER HOUR.....	39.8	34.5	60.2	74.4	-
10 CENTS.....	.3	-	.8	-	-
12 CENTS.....	.4	-	-	-	-
18 CENTS.....	1.4	-	-	27.8	-
20 CENTS.....	20.1	-	57.6	13.5	-
22 CENTS.....	.9	-	-	33.0	-
25 CENTS.....	1.3	-	1.8	-	-
UNIFORM PERCENTAGE.....	31.2	59.6	-	-	27.2
7 PERCENT.....	25.0	55.9	-	-	-
10 PERCENT.....	1.6	3.6	-	-	-
15 PERCENT.....	4.5	-	-	-	27.2
FULL DAYS PAY FOR REDUCED HOURS.....	4.7	-	12.0	-	-
OTHER FORMAL PAID DIFFERENTIAL.....	16.7	3.1	10.1	-	72.8

<sup>1</sup> Refers to policies of shipyards either operating late shifts or having provisions covering late shifts.

<sup>2</sup> Includes data for ports in addition to those shown separately.

<sup>3</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal totals.

**Table 11. Shift differential practices**

(Percent of production workers in shipyards employed on late shifts by amount of differential, United States and selected ports, September 1976)

SHIFT DIFFERENTIAL	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
SECOND SHIFT					
WORKERS EMPLOYED ON SECOND SHIFT.....	21.7	23.9	21.8	15.3	15.1
RECEIVING SHIFT DIFFERENTIAL.....	21.4	23.7	21.1	15.3	15.1
UNIFORM CENTS PER HOUR.....	11.3	8.9	18.3	15.3	-
10 CENTS.....	.6	-	.9	-	-
12 CENTS.....	.9	-	2.5	-	-
13 CENTS.....	.1	-	-	3.4	-
15 CENTS.....	2.0	.7	3.8	6.1	-
20 CENTS.....	3.9	-	10.7	5.8	-
25 CENTS.....	.1	-	.4	-	-
OVER 30 CENTS.....	3.7	8.2	-	-	-
UNIFORM PERCENTAGE.....	7.5	14.8	.5	-	4.4
3 PERCENT.....	(2)	.1	-	-	-
6 PERCENT.....	.2	-	.5	-	-
7 PERCENT.....	6.6	14.8	-	-	-
10 PERCENT.....	.7	-	-	-	4.4
FULL DAYS PAY FOR REDUCED HOURS.....	.7	-	2.3	-	-
OTHER FORMAL PAID DIFFERENTIAL.....	1.8	-	-	-	10.7
RECEIVING NO SHIFT DIFFERENTIAL.....	.3	.2	.7	-	-
THIRD SHIFT OR OTHER LATE-SHIFT					
WORKERS EMPLOYED ON THIRD OR OTHER LATE SHIFT.....	8.4	11.5	6.5	.3	4.2
RECEIVING SHIFT DIFFERENTIAL.....	8.4	11.5	6.5	.3	4.2
UNIFORM CENTS PER HOUR.....	5.9	8.1	6.4	.3	-
12 CENTS.....	(2)	-	-	-	-
18 CENTS.....	.1	-	-	-	-
20 CENTS.....	2.1	-	6.4	-	-
22 CENTS.....	(2)	-	-	.3	-
25 CENTS.....	(2)	-	-	-	-
UNIFORM PERCENTAGE.....	1.5	3.2	-	-	.6
7 PERCENT.....	1.4	3.1	-	-	-
10 PERCENT.....	(2)	-	-	-	-
15 PERCENT.....	.1	-	-	-	.6
FULL DAYS PAY FOR REDUCED HOURS.....	.2	-	.1	-	-
OTHER FORMAL PAID DIFFERENTIAL.....	.7	.3	-	-	3.7

<sup>1</sup> Includes data for ports in addition to those shown separately.

<sup>2</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal totals.

**Table 12. Hazard pay provisions**

(Percent of production workers in shipyards by hazard pay provisions, United States and selected ports, September 1976)

DIFFERENTIAL	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
WORKERS IN ESTABLISHMENTS HAVING PROVISIONS.....	64	94	25	87	59
WITH DIFFERENTIAL.....	64	94	25	87	59
UNIFORM CENTS PER HOUR.....	11	8	15	61	7
10 CENTS.....	1	-	-	28	-
16 CENTS.....	1	-	-	-	7
20 CENTS.....	(2)	-	-	-	-
25 CENTS.....	1	-	2	-	-
30 CENTS.....	4	8	-	-	-
OVER 30 CENTS.....	5	-	13	33	-
UNIFORM PERCENTAGE.....	10	19	-	-	-
50 PERCENT.....	10	19	-	-	-
OTHER FORMAL PAID DIFFERENTIAL...	43	67	10	26	52

<sup>1</sup> Includes data for ports in addition to those shown separately.

<sup>2</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal totals.

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**Table 13. Hazard pay practices**

(Percent of production workers in shipyards receiving hazard work pay by amount of differential, United States and selected ports, September 1976)

DIFFERENTIAL	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
WORKERS RECEIVING DIFFERENTIAL.....	2.1	4.2	0.5	-	0.5
UNIFORM CENTS PER HOUR.....	.6	.9	.5	-	.3
10 CENTS.....	-	-	-	-	-
16 CENTS.....	.1	-	-	-	.3
20 CENTS.....	-	-	-	-	-
25 CENTS.....	(2)	-	.1	-	-
30 CENTS.....	.4	.9	-	-	-
OVER 30 CENTS.....	.1	-	.4	-	-
UNIFORM PERCENTAGE.....	.1	.1	-	-	-
50 PERCENT.....	.1	.1	-	-	-
OTHER FORMAL PAID DIFFERENTIAL.....	1.5	3.2	-	-	.1

<sup>1</sup> Includes data for ports in addition to those shown separately.

<sup>2</sup> Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal totals.

**Table 14. Sea-trial pay provisions**

(Percent of production workers by sea-trial pay provisions, United States and selected ports, September 1976)

DIFFERENTIAL	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
WORKERS IN ESTABLISHMENTS HAVING PROVISIONS.....	62.9	80.8	58.5	-	44.5
WITH DIFFERENTIAL.....	56.7	80.8	58.5	-	7.0
UNIFORM PERCENTAGE.....	1.3	3.0	-	-	-
50 PERCENT.....	1.3	3.0	-	-	-
OTHER FORMAL PAID DIFFERENTIAL...	51.8	72.6	58.5	-	-
WITH NO DIFFERENTIAL.....	6.3	-	-	-	37.5

<sup>1</sup> Includes data for ports in addition to those shown separately.

NOTE: Because of rounding, sums of individual items may not equal totals.

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**Table 15. Paid holidays**

(Percent of production workers in shipyards with formal provisions for paid holidays, United States and selected ports, September 1976)

NUMBER OF PAID HOLIDAYS	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
ALL PRODUCTION WORKERS.....	100	100	100	100	100
PAID HOLIDAYS					
WORKERS IN ESTABLISHMENTS PROVIDING PAID HOLIDAYS.....	99	100	97	100	100
5 DAYS.....	3	-	10	-	-
6 DAYS.....	2	2	2	-	-
7 DAYS.....	6	-	14	-	7
8 DAYS.....	10	-	-	-	52
9 DAYS.....	3	-	2	74	-
10 DAYS.....	35	26	59	26	11
11 DAYS.....	41	69	10	-	30
12 DAYS.....	1	2	-	-	-

<sup>1</sup> Includes data for ports in addition to those shown separately.

NOTE: Because of rounding, sums of individual items may not equal totals.

**Table 16. Paid vacations**

(Percent of production workers in shipyards with formal provisions for paid vacations after selected periods of service, United States and selected ports, September 1976)

VACATION POLICY	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
ALL PRODUCTION WORKERS.....	100	100	100	100	100
WORKERS IN ESTABLISHMENTS					
PROVIDING PAID VACATIONS.....	100	100	100	100	100
LENGTH-OF-TIME PAYMENT.....	78	77	100	100	30
PERCENTAGE PAYMENT.....	22	23	-	-	70
<u>AMOUNT OF VACATION PAY<sup>2</sup></u>					
<b>AFTER 1 YEAR OF SERVICE:</b>					
1 WEEK.....	76	85	86	100	30
OVER 1 AND UNDER 2 WEEKS.....	23	15	12	-	70
2 WEEKS.....	1	-	-	-	(3)
<b>AFTER 2 YEARS OF SERVICE:</b>					
1 WEEK.....	68	83	84	100	-
OVER 1 AND UNDER 2 WEEKS.....	23	17	13	-	70
2 WEEKS.....	8	1	3	-	30
OVER 3 WEEKS.....	(3)	-	-	-	-
<b>AFTER 3 YEARS OF SERVICE:</b>					
1 WEEK.....	31	5	84	59	-
OVER 1 AND UNDER 2 WEEKS.....	17	28	12	-	-
2 WEEKS.....	46	52	4	41	100
OVER 2 WEEKS.....	7	14	-	-	-
<b>AFTER 5 YEARS OF SERVICE:</b>					
2 WEEKS.....	52	35	84	100	30
OVER 2 AND UNDER 3 WEEKS.....	30	26	13	-	70
3 WEEKS.....	16	35	-	-	-
OVER 3 WEEKS.....	2	2	3	-	-
<b>AFTER 10 YEARS OF SERVICE:</b>					
2 WEEKS.....	8	4	17	47	-
OVER 2 AND UNDER 3 WEEKS.....	37	21	61	-	51
3 WEEKS.....	26	26	19	53	41
OVER 3 AND UNDER 4 WEEKS.....	10	15	-	-	8
4 WEEKS.....	17	35	3	-	-

See footnotes at end of table.

**Table 16. Paid vacations—Continued**

(Percent of production workers in shipyards with formal provisions for paid vacations after selected periods of service, United States and selected ports. September 1976)

VACATION POLICY	UNITED STATES <sup>1</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
<u>AMOUNT OF VACATION PAY<sup>2</sup>--CONTINUED</u>					
<b>AFTER 15 YEARS OF SERVICE:</b>					
2 WEEKS.....	3	4	5	-	-
OVER 2 AND UNDER 3 WEEKS.....	(3)	-	1	-	-
3 WEEKS.....	36	40	31	47	30
OVER 3 AND UNDER 4 WEEKS.....	39	18	50	53	70
4 WEEKS.....	22	39	13	-	(3)
<b>AFTER 20 YEARS OF SERVICE:</b>					
UNDER 3 WEEKS.....	4	4	7	-	-
3 WEEKS.....	20	10	31	-	30
OVER 3 AND UNDER 4 WEEKS.....	28	1	50	-	70
4 WEEKS.....	29	46	13	100	(3)
OVER 4 AND UNDER 5 WEEKS.....	3	4	-	-	-
5 WEEKS.....	16	35	-	-	-
<b>AFTER 25 YEARS OF SERVICE:</b>					
2 WEEKS.....	3	4	5	-	-
OVER 2 AND UNDER 3 WEEKS.....	(3)	-	1	-	-
3 WEEKS.....	17	10	21	-	30
OVER 3 AND UNDER 4 WEEKS.....	27	-	50	-	70
4 WEEKS.....	22	35	12	47	(3)
OVER 4 AND UNDER 5 WEEKS.....	9	12	10	-	-
5 WEEKS.....	18	36	-	53	-
OVER 5 WEEKS.....	3	3	-	-	-
<b>AFTER 30 YEARS OF SERVICE:</b>					
2 WEEKS.....	3	4	5	-	-
OVER 2 AND UNDER 3 WEEKS.....	(3)	-	1	-	-
3 WEEKS.....	17	10	21	-	30
OVER 3 AND UNDER 4 WEEKS.....	27	-	50	-	70
4 WEEKS.....	17	24	12	47	(3)
OVER 4 AND UNDER 5 WEEKS.....	1	1	-	-	-
5 WEEKS.....	30	56	10	53	-
OVER 5 WEEKS.....	5	4	-	-	-

<sup>1</sup> Includes data for ports in addition to those shown separately.

<sup>2</sup> Vacation payments, such as percent of annual earnings, were converted to an equivalent time basis. Periods of service were chosen arbitrarily and do not necessarily reflect individual establishment provisions for progression. For

example, changes in proportions at 10 years may include changes between 5 and 10 years.

<sup>3</sup> Less than 0.5 percent.

NOTE: Because of rounding, sums of individual items may not equal totals.



**Table 17. Health, insurance, and retirement plans**

(Percent of production workers in shipyards, with specified health, insurance, and retirement plans, United States and selected ports, 1976)

TYPE OF PLAN <sup>1</sup>	UNITED STATES <sup>2</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
ALL WORKERS.....	100	100	100	100	100
LIFE INSURANCE.....	94	100	85	100	93
NONCONTRIBUTORY PLANS.....	77	74	70	72	93
ACCIDENTAL DEATH AND DISMEMBERMENT INSURANCE.....	65	47	79	59	93
NONCONTRIBUTORY PLANS.....	52	27	64	59	93
SICKNESS AND ACCIDENT INSURANCE OR SICK LEAVE OR BOTH <sup>3</sup> .....	69	62	86	100	44
SICKNESS AND ACCIDENT INSURANCE.....	69	62	85	100	44
NONCONTRIBUTORY PLANS.....	37	36	22	72	44
SICK LEAVE (FULL PAY, NO WAITING PERIOD).....	9	20	-	-	(4)
SICK LEAVE (PARTIAL PAY OR WAITING PERIOD).....	2	4	1	-	-
LONG TERM DISABILITY.....	7	13	2	-	-
NONCONTRIBUTORY PLANS.....	7	13	2	-	-
HOSPITALIZATION INSURANCE.....	99	100	96	100	100
NONCONTRIBUTORY PLANS.....	64	73	30	26	100
SURGICAL INSURANCE.....	99	100	96	100	100
NONCONTRIBUTORY PLANS.....	64	73	30	26	100
MEDICAL INSURANCE.....	99	100	96	100	100
NONCONTRIBUTORY PLANS.....	64	73	30	26	100
MAJOR MEDICAL INSURANCE.....	98	100	95	100	100
NONCONTRIBUTORY PLANS.....	64	73	29	26	100
RETIREMENT PLANS <sup>5</sup> .....	95	99	86	100	100
PENSIONS.....	95	99	86	100	100
NONCONTRIBUTORY PLANS.....	76	98	26	100	100
SEVERANCE PAY.....	1	-	-	-	-

<sup>1</sup> Includes only plans for which the employer pays at least part of the cost and excludes legally required plans such as workers' compensation and social security; however, plans required by State temporary disability insurance laws are included if the employer contributes more than is legally required or employees receive benefits exceeding the legal requirements.

<sup>2</sup> Includes data for ports in addition to those shown separately.

<sup>3</sup> Unduplicated total of workers receiving sick leave or sickness and accidental insurance shown separately.

<sup>4</sup> Less than 0.5 percent.

<sup>5</sup> Unduplicated total of workers covered by pension and retirement severance pay plans shown separately.

NOTE: Because of rounding, sums of individual items may not equal totals.

**Table 18. Other selected benefits**

(Percent of production workers in shipyards with other selected benefits, United States and selected ports, September 1976)

ITEM <sup>1</sup>	UNITED STATES <sup>2</sup>	ATLANTIC COAST	GULF COAST	GREAT LAKES	PACIFIC COAST
<b>WORKERS IN ESTABLISHMENTS WITH PROVISIONS FOR:</b>					
PAID FUNERAL LEAVE.....	35	62	2	100	(3)
PAID JURY DUTY LEAVE.....	77	100	85	41	(3)
DENTAL INSURANCE.....	31	40	-	-	70
COST OF LIVING ADJUSTMENT.....	61	48	61	59	100
PLAN BASED ON CPI <sup>3</sup> .....	52	36	51	59	100
PLAN ON ANOTHER BASIS.....	8	11	10	-	-
CALL-IN PAY.....	90	100	77	87	83
REPORT-IN PAY.....	90	99	78	59	92

<sup>1</sup> For definition of items, see appendix B.

<sup>2</sup> Includes data for ports in addition to those shown separately.

<sup>3</sup> Less than 0.5 percent.

<sup>4</sup> Consumer Price Index published by the Bureau of Labor Statistics.

NOTE: Because of rounding, sums of individual items may not equal totals.

## Appendix: A. U.S. Navy Shipyards

Survey data in the main body of this bulletin relate to private shipyards. The U.S. Navy, which operates seven shipyards in the conterminous United States, employed 59,800 civilians in September 1976. The three yards on the West Coast (Puget Sound, San Francisco, and Los Angeles) had 27,300 workers; Norfolk and Charleston on the southern Atlantic Coast had 18,800 workers; and the northern Atlantic yards (Philadelphia and Portsmouth) employed 13,700. In addition, the Navy has a large facility in Hawaii with approximately 5,500 workers. Most of the work in Navy yards is repairing and major converting of vessels whereas new ships are constructed in private yards under contract.

Pay rates for civilian trade, maintenance, and service workers (blue-collar) of Navy shipyards (as well as for other U.S. Government agencies) are set in accordance with provisions of the Federal Wage System (5 U.S.C. 5341-534a). This system provides for common job grading standards and pay policies among U.S. Government agencies. Pay

rates are adjusted annually in line with prevailing rates among private employers in each geographic area. Each grade has five longevity pay steps.

Table A-1 compares occupations and their grade level in U.S. Navy yards with BLS job titles in the private shipyard survey. Table A-2 provides the Wage Board Schedule for nonsupervisory workers for each of the seven Navy facilities.

In addition to straight-time pay rates in table A-2, workers also receive the same supplementary benefits as those provided to General Schedule (white-collar) workers.<sup>1</sup> Navy shipyard workers also may receive hazard pay, shift differentials, and premium pay for overtime, holiday, and Sunday work.

<sup>1</sup> For a description of supplementary wage benefits provided Federal employees under the General Schedule, see *Wage Chronology: Federal Employees Under the General Schedule Pay System, July 1924-October 1974* (BLS Bulletin 1870, 1975), and its supplement covering 1975.

Table A-1. Occupational title and wage grade of workers in U.S. Navy shipyards and corresponding BLS survey job title, September 1976

U.S. Navy occupational title	Wage grade	BLS job title
Janitor .....	1 or 2	Janitor, porter, cleaner
Laborer .....	2	Laborer, material handling
Equipment cleaner .....	4 or 5	Grinder-chipper
Forklift operator .....	5	Power-truck operator, forklift
Trades helper .....	5	Helper, maintenance trades
Motor vehicle operator .....	6	Truckdriver
Painting worker .....	7	Painter
Bridge crane operator .....	7 or 9	Crane operator, electric bridge
Machine-tool operator .....	8	Machine-tool operator, production, class C
Welding worker .....	8	Welder, hand, class B
Welding worker .....	8	Welder, machine (resistance) class B
Welding worker and welder .....	8 or 10	Welder, machine (arc or gas)
Carpenter .....	9	Carpenter, maintenance
Machine-tool operator .....	9	Machine-tool operator, production, class A and B
Machine-tool operator .....	9	Machine-tool operator (toolroom)
Boom crane operator .....	9 or 11	Crane operator, gantry
Boilermaker .....	10	Boilermaker
Electrician .....	10	Marine electrician and electrician, maintenance
Machinist .....	10	Machinist, maintenance
Mechanic .....	10	Mechanic, maintenance
Pipefitter .....	10	Marine pipefitter and pipefitter, maintenance
Rigger .....	10	Millwright
Sheet-metal mechanic .....	10	Sheet-metal worker
Shipfitter .....	10	Shipfitter
Shipwright .....	10	Shipwright
Welder .....	10	Welder, hand, class A
Welder .....	10	Welder, machine (resistance), class A
Welder .....	10	Welder, maintenance
Electronic mechanic .....	11 or 12	Electronics technician, class A
Toolmaker .....	13	Tool-and-die-maker

**Table A-2. Federal Wage System hourly wage rates<sup>1</sup> for nonsupervisory workers in U.S., Navy Shipyards, September 1976**

Wage grade and first/last steps	North Atlantic ports		South Atlantic ports		Pacific ports		
	Philadel- phia <sup>2</sup>	Portsmouth	Charleston	Norfolk	Los Angeles	Puget Sound <sup>4</sup>	San Francisco <sup>5</sup>
WG-1 Step 1 .....	\$4.47	\$3.31	\$3.49	\$3.47	\$4.39	\$4.92	\$4.70
Step 5 .....	5.22	3.86	4.08	4.04	5.12	5.75	5.49
WG-2 Step 1 .....	4.65	3.55	3.84	3.72	4.63	5.12	4.98
Step 5 .....	5.42	4.14	4.48	4.35	5.40	5.97	5.81
WG-3 Step 1 .....	4.83	3.80	4.19	3.97	4.86	5.31	5.25
Step 5 .....	5.63	4.44	4.88	4.64	5.67	6.19	6.13
WG-4 Step 1 .....	5.00	4.10	4.53	4.23	5.10	5.50	5.53
Step 5 .....	5.84	4.78	5.29	4.94	5.95	6.42	6.45
WG-5 Step 1 .....	5.17	4.39	4.88	4.48	5.34	5.69	5.80
Step 5 .....	6.04	5.12	5.69	5.23	6.23	6.64	6.76
WG-6 Step 1 .....	5.36	4.68	5.22	4.74	5.58	5.88	6.08
Step 5 .....	6.25	5.47	6.09	5.53	6.51	6.87	7.09
WG-7 Step 1 .....	5.53	4.98	5.57	4.99	5.81	6.08	6.36
Step 5 .....	6.45	5.81	6.50	5.82	6.78	7.09	7.41
WG-8 Step 1 .....	5.70	5.27	5.90	5.25	6.05	6.27	6.62
Step 5 .....	6.65	6.15	6.89	6.13	7.06	7.31	7.73
WG-9 Step 1 .....	5.88	5.57	6.25	5.50	6.29	6.47	6.90
Step 5 .....	6.85	6.50	7.29	6.42	7.34	7.55	8.05
WG-10 Step 1 .....	6.06	5.86	6.60	5.76	6.53	6.66	7.17
Step 5 .....	7.07	6.83	7.69	6.72	7.62	7.77	8.37
WG-11 Step 1 .....	6.23	6.15	6.94	6.01	6.76	6.85	8.69
Step 5 .....	7.27	7.18	8.10	7.01	7.88	8.00	7.45
WG-12 Step 1 .....	6.40	6.45	7.29	6.27	7.00	7.05	7.72
Step 5 .....	7.47	7.53	8.50	7.31	8.16	8.22	9.00
WG-13 Step 1 .....	6.58	6.74	7.63	6.52	7.24	7.24	8.00
Step 5 .....	7.67	7.86	8.90	7.60	8.44	8.44	9.33

<sup>1</sup> Employees are normally hired at Step 1 of the 5-step rate range for the grade and advance to Step 2 after 26 weeks of satisfactory service; advancement to Step 3 requires 78 weeks of satisfactory service in Step 2; and advancement to steps 4 and 5 requires 104 weeks of satisfactory service in each of steps 3 and 4. Each step is separated by 4-percent increments.

<sup>2</sup> Effective December 21, 1976, workers received approximately

a 9-percent increase in pay rates.

<sup>3</sup> Effective November 23, 1976, workers received approximately a 10-percent increase in pay rates.

<sup>4</sup> Effective November 9, 1976, workers received approximately an 8-percent increase in pay rates.

<sup>5</sup> Effective November 9, 1976, workers received approximately an 8-percent increase in pay rates.

# Appendix B. Scope and Method of Survey

## Scope of survey

The survey included establishments primarily engaged in building and repairing all types of ships, barges, and lighters, whether propelled by sail or motor power or towed by other crafts (SIC 3731 as defined in the 1967 edition of the *Standard Industrial Classification Manual* prepared by the U.S. Office of Management and Budget). Included in the industry were yards converting and altering ships. Excluded from the survey were (1) Separate auxiliary units such as central offices; (2) establishments fabricating structural assemblies of components for ships; (3) subcontractors engaged in ship painting, joinery, carpentry, electrical and electronic work; and (4) U.S. Navy shipyards.

Establishments studied were selected from those employing 250 workers or more at the time of reference of the data used in compiling the universe lists. Table B-1 shows the number of establishments and workers estimated to be within the scope of the survey, as well as the number actually studied by the Bureau.

## Method of study

Data were obtained by personal visits of the Bureau's field staff to a representative sample of establishments within the scope of the survey. To obtain appropriate accuracy at minimum cost, a greater proportion of large than of small establishments was studied. All estimates are presented, therefore, as relating to all establishments in the industry, excluding only those below the minimum size at the time of reference of the universe data.

## Establishment definition

An establishment is defined for this study as a single physical location where manufacturing operations are performed. An establishment is not necessarily identical with a company, which may consist of one establishment or more.

## Employment

Estimates of the number of workers within the scope of the study are intended as a general guide to the size

and composition of the industry's labor force, rather than as precise measures of employment.

## Production workers

The terms "production workers" and "production and related workers," used interchangeably in this bulletin, include working supervisors and all nonsupervisory workers engaged in nonoffice activities. Administrative, executive, professional, and technical personnel, and force-account construction employees, who are used as a separate work force on the firm's own properties, are excluded.

## Occupational classification

Occupational classification was based on a uniform set of job descriptions designed to take account of interestablishment and interarea variations in duties within the same job. (See appendix C for these descriptions.) The criteria for selection of the occupations were: The number of workers in the occupation; the usefulness of the data in collective bargaining; and appropriate representation of the entire job scale in the industry. Working supervisors, apprentices, learners, beginners, trainees, and handicapped, part-time, temporary, and probationary workers were not reported in the data for selected occupations but were included in the data for all production workers.

## Wage data

Information on wages relates to straight-time hourly earnings, excluding premium pay for overtime and for work on weekends, holidays, and late shifts. Incentive payments, such as those resulting from piecework or production bonus systems, and cost-of-living bonuses were included as part of the workers' regular pay. Nonproduction bonus payments, such as Christmas or yearend bonuses, were excluded.

*Average (mean) hourly rates or earnings* for each occupation or category of workers, such as production workers, were calculated by weighting each rate (or hourly earnings) by the number of workers receiving the rate, totaling, and dividing by the number of individuals. The hourly earnings of salaried workers

**Table B-1. Estimated number of establishments and workers within scope of survey and number studied, shipbuilding and repairing, September 1976**

Ports	Number of establishments <sup>1</sup>		Workers in establishments		
	Within scope of survey	Actually studied	Within scope of survey		Actually studied
			Total <sup>2</sup>	Production workers	Total
United States <sup>3</sup> .....	78	50	142,276	104,027	128,464
Atlantic Coast.....	23	16	69,320	46,561	66,569
Gulf Coast.....	25	13	43,772	32,712	38,035
Great Lakes .....	5	4	3,325	2,932	2,867
Pacific Coast.....	18	10	20,324	17,372	15,458

<sup>1</sup> Includes only those shipyards with 250 workers or more at the time of reference of the universe data.

<sup>2</sup> Includes executive, professional, office, and other workers

excluded from the production worker category shown separately.

<sup>3</sup> Includes data for other ports in addition to those shown separately. Alaska and Hawaii were not included in the study.

were obtained by dividing straight-time salary by normal (or standard) hours to which the salary corresponds.

### Method of wage payment

Tabulations by method of wage payment relate to the number of workers paid under the various time and incentive wage systems. Formal rate structures for time-rated workers provide single rates or a range of rates for individual job categories. In the absence of a formal rate structure, pay rates are determined primarily by the qualifications of the individual worker. A single rate structure is one in which the same rate is paid to all experienced workers in the same job classification. Learners, apprentices, or probationary workers may be paid according to rate schedules which start below the single rate and permit the workers to achieve the full job rate over a period of time. An experienced worker occasionally may be paid above or below the single rate for special reasons, but such payments are exceptions. Range-of-rate plans are those in which the minimum, maximum, or both of these rates paid experienced workers for the same job are specified. Specific rates of individual workers within the range may be determined by merit, length of service, or a combination of these. Incentive workers are classified under piecework or bonus plans. Piecework is work for which a predetermined rate is paid for each unit of output. Production bonuses are for production in excess of a quota or for completion of a task in less than standard time.

### Scheduled weekly hours

Data on weekly hours refer to the predominant work schedule for full-time production workers employed on the day shift.

### Shift, hazard, and sea trial pay provisions and practices

Provisions relate to the policies of establishments either currently operating late shifts or having formal provisions covering such work. Practices relate to workers employed on late shifts or receiving hazard or sea trial pay at the time of the survey.

### Establishment practices and supplementary wage provisions

Supplementary benefits in an establishment were considered applicable to all production workers if they applied to half or more of such workers in the establishment. Similarly, if fewer than half of the workers were covered, the benefit was considered nonexistent in the establishment. Because of length-of-service and other eligibility requirements, the proportion of workers receiving the benefits may be smaller than estimated.

*Paid holidays.* Paid holiday provisions relate to full-day and half-day holidays provided annually.

*Paid vacations.* The summary of vacation plans is limited to formal arrangements and exclude informal plans whereby time off with pay is granted at the discretion of the employer or supervisor. Payments not on a time basis were converted; for example, a payment of 2 percent of annual earnings was considered the equivalent of 1 week's pay. The periods of service for which data are presented represent the most common practices, but they do not necessarily reflect individual establishment provisions for progression. For example, changes in proportions indicated at 10 years of service

may include changes which occurred between 5 and 10 years.

*Health, insurance, and retirement plans.* Data are presented for health, insurance, pension, and retirement severance plans for which the employer pays all or a part of the cost, excluding programs required by law such as workers' compensation and social security. Among plans included are those underwritten by a commercial insurance company and those paid directly by the employer from his current operating funds or from a fund set aside for this purpose.

Death benefits are included as a form of life insurance. Sickness and accident insurance is limited to that type of insurance under which predetermined cash payments are made directly to the insured on a weekly or monthly basis during illness or accident disability. Information is presented for all such plans to which the employer contributes at least a part of the cost. However, in New York and New Jersey, where temporary disability insurance laws require employer contributions,<sup>1</sup> plans are included only if the employer (1) contributes more than is legally required, or (2) provides the employees with benefits which exceed the requirements of the law.

Tabulations of paid sick leave plans are limited to formal plans which provide full pay or a proportion of the worker's pay during absence from work because of illness; informal arrangements have been omitted. Separate tabulations are provided for (1) plans which provide full pay and no waiting period, and (2) plans providing either partial pay or a waiting period.

Long-term disability insurance plans provide payments to totally disabled employees upon the expiration of sick leave, sickness and accident insurance, or both, or after a specified period of disability (typically 6 months). Payments are made until the end of disability, a maximum age, or eligibility for retirement benefits. Payments may be full or partial, but are almost always reduced by social security, workers' compensation, and private pension benefits payable to the disabled employee.

Medical insurance refers to plans providing for complete or partial payment of doctors' fees. Such plans may be underwritten by a commercial insurance company or a nonprofit organization, or they may be a form of self-insurance.

Major medical insurance, sometimes referred to as extended medical or catastrophe insurance, includes plans designed to cover employees for sickness or

injury involving an expense which exceeds the normal coverage of hospitalization, medical, and surgical plans.

Tabulations of retirement pensions are limited to plans which provide regular payments for the remainder of the retiree's life. Data are presented separately for retirement severance pay (one payment or several over a specified period of time) made to employees on retirement. Establishments providing both retirement severance payments and retirement pensions to employees were considered as having both retirement pensions and retirement severance plans; however, establishments having optional plans providing employees a choice of either retirement severance payments or pensions were considered as having only retirement pension benefits.

*Paid funeral and jury-duty leave.* Data for paid funeral and jury-duty leave relate to formal plans which provide at least partial payment for time lost as a result of attending funerals of specified family members or serving as a juror.

*Technological severance pay.* Data relate to formal plans providing for payments to employees permanently separated from the company because of a technological change or plant closing.

*Call-in Pay.* Data relate to pay guaranteed to a worker who is called to work outside his/her regular shift.

*Reporting-in Pay.* Data relate to pay guaranteed to a worker who reports to his/her regular shift and there is no work available.

*Dental Insurance.* Data relate to formal plans covering normal service such as fillings, extractions, and X-rays. Many health insurance plans provide benefits for certain kinds of oral surgery or dental care required as the result of an accident; plans limited to such conditions were excluded.

*Cost-of-living adjustments.* Data relate to formal plans whereby wage rates are adjusted periodically in keeping with changes in the Consumer Price Index or some other measure.

<sup>1</sup> The temporary disability laws in California and Rhode Island do not require employer contributions. do not require employer contributions.



## Appendix C. Occupational descriptions

The primary purpose of preparing job descriptions for the Bureau's wage surveys is to assist its field staff in classifying into appropriate occupations workers who are employed under a variety of payroll titles and different work arrangements from establishment to establishment and from area to area. This permits the grouping of occupational wage rates representing comparable job content. Because of this emphasis on inter-establishment and interarea comparability of occupational content, the Bureau's job descriptions may differ significantly from those in use in individual establishments or those prepared for other purposes. In applying these job descriptions, the Bureau's field staff is instructed to exclude working supervisors, apprentices, learners, beginners, trainees, and handicapped, part-time, temporary, and probationary workers.

### Production

#### Boilermaker

Assembles boilers, tanks, vats, and pressure vessels, using power tools and handtools. *Work involves most of the following:* Determining location and relationship of parts from blueprints; connecting firetubes to heads or watertubes to drums and headers of boilers, by expanding and beading ends with tube expander and beading ends with power hammer; drilling and tapping holes with portable drill to install studs; tightening bolts with hand or power wrenches to assemble frames, davit heads, burners, or furnace casing to firetube boilers; bolting or screwing accessories, such as manholes, handholes, fans, gages, and valves to vessel, using handtools or power wrenches; replacing defective parts with power wrenches, prying bars, or handtools. May thread and install stay tubes, using pipe wrench and dies. May remove and replace rivets and calk seams to repair riveted shells and structures, using pneumatic chisel, riveter, and calking hammer. May cut out defective parts with acetylene torch.

#### Electronics technician

Works on various types of electronic equipment and related devices by performing one or a combination of the following: Installing, maintaining, overhauling, troubleshooting, modifying, constructing, and testing. Work requires practical application of technical knowledge of electronics principles, ability to determine

malfunctions, and skill to put equipment in required operating condition.

The equipment—consisting of either many different kinds of circuits or multiple repetition of the same kind of circuit—includes, but is not limited to, the following: (a) Electronic transmitting and receiving equipment (e.g., radar, radio, television, telephone, sonar, navigational aids), (b) digital and analog computers, and (c) industrial and medical measuring and controlling equipment.

This classification excludes repairers of such standard electronic equipment as common office machines and household radio and television sets; production assemblers and testers; workers whose primary duty is servicing electronic test instruments; technicians who have administrative or supervisory responsibility; and drafters, designers, and professional engineers.

Positions are classified into levels on the basis of the following definitions.

*Class A.* Applies advanced technical knowledge to solve unusually complex problems (i.e., those that typically cannot be solved solely by reference to manufacturers' manuals or similar documents) in working on electronic equipment. Examples of such problems include location and density of circuitry, electromagnetic radiation, isolating malfunctions, and frequent engineering changes. Work involves: A detailed understanding of the interrelationships of circuits; exercising independent judgment in performing such tasks as making circuit analyses, calculating wave forms, tracing relationships in signal flow; and regularly using complex test instruments (e.g., dual trace oscilloscopes, Q-meters, deviation meters, pulse generators).

Work may be reviewed by supervisor (frequently an engineer or designer) for general compliance with accepted practices. May provide technical guidance to lower level technicians.

*Class B.* Applies comprehensive technical knowledge to solve complex problems (i.e., those that typically can be solved solely by properly interpreting manufacturers' manuals or similar documents) in working on electronic equipment. Work involves: A familiarity with the interrelationships of circuits, and judgment in determining work sequence and in selecting tools and testing instruments, usually less complex than those used by the class A technician.

*Class C.* Applies working technical knowledge to perform simple or routine tasks in working on electronic equipment, following detailed instructions which cover virtually all procedures. Work typically involves such tasks as: Assisting higher level technicians by performing such activities as replacing components, wiring circuits, and taking test readings; repairing simple electronic equipment; and using tools and common test instruments (e.g., multimeters, audio signal generators, tube testers, oscilloscopes). Is not required to be familiar with the interrelationships of circuits. This knowledge, however, may be acquired through assignments designed to increase competence (including classroom training) so that worker can advance to higher level technician.

Receives technical guidance, as required, from supervisor or higher level technician. Work is typically spot checked, but is given detailed review when new or advanced assignments are involved.

## **Grinder-chipper**

(Rough grinder; grinder-filer)

Grinds and chips weld splatter, high spots, burrs, slag, and rust from metal surfaces of ships to improve their appearance or prepare them for painting, using portable or pedestal grinders, chipping hammers, hand-files and wire brushes. *Work involves most of the following:* Inserting specified grinding wheel, wire brush, or cutting chisel into portable grinder or power hammer; activating power tool; positioning and guiding tool along high or defective spots on surface of workpiece. May chip or grind out pits or shrink cracks. Grinds portable pieces, using pedestal grinder. May sharpen chisels and dress grinding wheel, using pedestal grinder or wheel dresser.

## **Inspector**

Inspects parts, products, and/or processes. Performs such operations as examining parts or products for

flaws and defects, checking their dimensions and appearance to determine whether they meet the required standards and specifications.

*Class A* - Responsible for decisions regarding the quality of the product and/or operations. *Work involves any combination of the following:* Thorough knowledge of the processing operations in the use of a variety of precision measuring instruments; interpreting drawings and specifications in inspection work on units composed of a large number of component parts; examining a variety of products of processing operations; determining causes of flaws in products and/or processes and suggesting necessary changes to correct work methods; devising inspection procedures for new products.

*Class B.* *Work involves any combination of the following:* Knowledge of processing operations in the branch of work to which he is assigned, limited to familiar products and processes or where performance is dependent on past experience; performing inspection operations on products and/or processes having rigid specifications, but where the inspection procedures involve a sequence of inspection operations, including decisions regarding proper fit or performance of some parts; using precision measuring instruments.

*Class C.* *Work involves any combination of the following:* Short cycle, repetitive inspection operations; using a standardized, special purpose measuring instrument repetitively; visual examination of parts or products, rejecting units having obvious deformities or flaws.

## **Loft worker**

(Loftsman)

Lays out lines of ship to full scale on mold-loft floor and constructs templates and molds to be used as patterns and guides for layout and fabrication of various structural parts of ships. *Work involves most of the following:* Laying out full-scale portions of ship's plan, working from blueprints and tables of offsets; marking frame lines and other reference lines on loft floor; measuring dimensions between lines and preparing tables of offsets; comparing prepared tables with tables on blueprints; constructing template, using knowledge of geometric construction, and tools; marking templates with identifying data and instructions, such as number of pieces to be made, type, and weight of stock and location for installation; and constructing full scale wood mockups of ship's parts and sections for use as guide in shaping or positioning parts.

## **Machine-tool operator, production**

Operates or tends one or more nonportable, power-driven machine tools (including numerically controlled

machine tools) in order to shape metal by progressively removing portions of the stock in the form of chips or shavings, or by abrasion, such as:

- Automatic lathes
- Boring machines
- Drill presses, single or multiple-spindle
- Engine lathes
- Gear-cutting machines
- Machine tools, miscellaneous<sup>1</sup>
- Milling machines
- Planers
- Screw machines, automatic
- Screw machines, hand
- Shapers
- Turret lathes, automatic

*Class A.* Sets up machines, by determining proper feeds, speeds, tooling and operation sequence or by selecting those prescribed in drawings, blueprints, or layouts; makes necessary adjustments during operations where changes in work and setup are relatively frequent and where care is essential to achieve requisite dimensions of very close tolerances.

*Class B.* Sets up machines on standard or roughing operations where feeds, speeds, tooling and operation sequence are prescribed or maintains operation setup made by others; makes all necessary adjustments during operation where care is essential to achieve very close tolerances or where changes in product are relatively frequent.

*Class C.* Operates machine on routine and repetitive operations; makes only minor adjustments during operations; when trouble occurs, stops machine and calls foreman, leadman, or setup man to correct the operation.

## **Machinist, production**

(All-round machinist, custom machinist)

Fabricates, by a series of progressive machining operations, complete metal parts, mechanisms, or machines to be used as, or part of, the end product of the establishment. *Work involves most of the following:* Interpreting written instructions and specifications; planning and laying out work; using a variety of machinist's handtools and precision measuring instruments; setting up and operating standard machine tools; shaping metal parts to close tolerances; making standard shop computations relating to dimensions of work, tooling, feeds and speeds of machines; knowledge of the working properties of the common metals; selecting standard materials, parts, and equipment needed for his work; fitting and assembling parts. In general, the machinist's work normally requires a rounded training in machine shop practice usually acquired through a

formal apprenticeship or equivalent training and experience.

## **Marine electrician**

Installs and repairs wiring, fixtures, and equipment for all electrical services aboard ship, following blueprints and wiring diagrams. *Work involves most of the following:* Installing conduit to bulkheads with brackets and screws, using handtools, and threading wires through conduit to terminals, such as connection boxes, circuit breakers, voltage regulators, and switch panels; connecting power supply circuits to radio, radar, sonar, fire control, and other electronic equipment; and testing electrical characteristics, such as voltage, resistance, and phase angle, in circuits, using voltmeters, ohmmeters, and phase rotation indicators. May construct instrument panels, using handtools, rulers, dividers, and power drills, following specifications.

## **Marine machinist**

(Outside machinist)

Installs ship machinery, such as propelling machinery, auxiliary motors, pumps, ventilating equipment, and steering gear, such as evaporators, stills, heaters, pumps, condensers, and boilers, and connecting them to steampipe systems; testing installed machinery and equipment during dock and sea trials. May set up and operate such machine shop tools as lathe, boring mill, planer, shaper, slotter, and milling machine to fabricate replacement parts.

## **Marine pipefitter**

Lays out, installs, and maintains ships' piping systems, such as steam heat and power, hot water, hydraulic, air pressure, and oil lines, following blueprints, and using handtools and shop machines. *Work involves most of the following:* Planning layout of pipe sections, allowing for location of bulkheads, machinery, passageways, holes, and obstructions; cutting and boring holes in bulkheads and decks for installation of pipes; operating shop machines to cut and thread pipe and pipe fittings, such as valves, traps, and thermostats; packing pipe with sand to avoid contortion of pipe and bending pipe to specified shape on pipe-bending fixture; bolting or welding pipe brackets to support pipe systems; connecting pipes to fixtures, such as radiators,

<sup>1</sup> Includes operators of machine tools not specifically listed above but within the general definition of operators of machine tools of the metalcutting type, as well as operators required alternately to operate more than one type of machine tool.

laundry, and galley equipment, pumps, and tanks, using wrench, and soldering joints to seal connections, using hand torch. May repair, pack, and adjust valves. May test installed systems for leaks and to insure that system meets specifications, using hydrostatic and other pressure test equipment.

### **Marine rigger**

(Outside rigger)

Installs and repairs rigging and weight-handling gear on ships and attaches hoists and pulling gear to rigging to lift, move, and position machinery, equipment, structural parts, and other heavy loads aboard ships. *Work involves most of the following:* Forming slings and towing bridles by looping and splicing cable or by crimping metal sleeve around cable end and body of cable; splicing and tying rope to form nets, ladders, and other rigging; installing hooks, swivels, and turnbuckles in rigging; reeving lines through blocks and pulleys; sewing canvas or leather covers on rigging at friction points; selecting and attaching gear, braces, and cushions, according to weight and distribution of load, availability of hoisting machinery, and presence of obstacles; signalling workers operating cranes or other equipment to move load; installing beam clamps, pad eyes, gallows frames, and other supporting structures for rigging gear; controlling movement of heavy equipment through narrow blocks, chainfalls, and rollers; laying out lines, snubbing lines on cleats or bollards, or hauling in lines with capstans; installing or repairing ship's rigging, such as mast or antenna rigs, and winch or windlass rigging; installing masts, booms, yardarms, and gaffs, working aloft as required; and rigging and hanging scaffolds and stages that require blocks and pulleys.

### **Painter**

Applies paint, varnish, lacquer, or other finishes to surfaces of ship, for protective purposes primarily, with brush or spray gun. Work is repetitive in character, requiring little or no selection of color schemes or shading and matching of colors, and the finishes are either standard in character or prepared by others.

### **Power-shear operator**

Operates one or more types of power shears to cut metal sheets, plates, bars, rods, and other metal shapes to size or length. *Work involves most of the following:* Setting-up and operating power-shear equipment, setting stop gauges, aligning material and performing shearing operations on machine; shearing large or

heavy material to layout or specified dimensions; performing shearing operations involving angular or other difficult cuts.

### **Sheet-metal worker**

Fabricates, assembles, installs, and repairs sheet-metal products and equipment, according to job order or blueprints. *Work involves most of the following:* Selecting gauge and type of sheet metal according to product being fabricated and knowledge of metal; locating and marking dimension and reference lines of metal sheet; setting up and operating fabricating machines, such as shears, brakes, bending rolls, and punch and drill presses, to cut, bend, and straighten sheet metal; shaping metal over anvils, blocks, or forms; setting up and operating soldering and welding equipment to join together sheet metal parts; smoothing seams, joints, or burred surfaces, using files and portable grinder or buffer; and inspecting assemblies and installations for conformance with specifications, using measuring instruments, such as calipers, scales, and micrometer.

### **Shipfitter**

Lays out and fabricates metal structural parts, such as plates, bulkheads, and frames, and braces them in position within hull of ship for riveting or welding. *Work involves most of the following:* Laying out position of parts on metal, working from blueprints or templates and using scribe and handtools; locating and marking reference lines, such as centerlines, buttock lines, and frame lines; positioning parts in hull of ship, assisted by rigger; aligning parts in relation to each other, using jacks, turnbuckles, clips, wedges, and mauls; marking location of holes to be drilled; and installing temporary fasteners to hold part in place for welding or riveting; installing packing, gaskets, liners, and structural accessories and members, such as doors, hatches, brackets, and clips. May prepare molds and templates for fabrication to nonstandard parts. May tack weld clips and brackets in place prior to permanent welding. May roll, bend, flange, cut, and shape plates, beams, and other heavy metal parts, using shop machinery such as plate rolls, presses, bending brakes, and joggle machines.

### **Shipwright**

(Ship carpenter)

Constructs or repairs ships, following blueprints or ship's plans. *Work involves most of the following:* Sighting, plotting, and marking reference points and lines on building dock or way to maintain alinement of vessel during construction or repair, using transit, plumb bob,

tapes, and levels; building keel and bilge blocks, cradles, and shoring for supporting ships in drydock, using power and hand woodworking tools; positioning and securing blocking and other structures on dock platform, according to ship's blueprints; alining vessel over blocks; establishing reference points and lines on ship's hull for locating machinery and other equipment, in accordance with ship's alinement and shape; fabricating and installing furring pieces, aprons, uprights, and other wood framing in ship; shaping, finishing, and installing wooden spars, masts, and cargo booms; trimming wooden frames and other timbers, using broadax and adz; and spiking or bolting metal fittings, plates, and bulkheads to wooden parts of ship, using brace and bits, augers, mauls, and wrenches.

### **Welder, hand**

Fuses (welds) metal objects by means of an oxyacetylene torch or arc welding apparatus in the fabrication of metal shapes and in repairing broken or cracked metal objects. In addition to performing hand welding or brazing operation, the welder may also lay out guide lines or marks on metal parts and may cut metal with cutting torch.

*Class A.* Performs welding operations requiring *most of the following:* Planning and laying out of work from drawings, blueprints, or other written specifications; knowledge of welding properties of a variety of metals and alloys; setting up work and determining operation sequence; welding high pressure vessels or other objects involving critical safety and load requirements; working from a variety of positions.

*Class B.* Performs welding operations on repetitive work, where no critical safety and load requirements are involved; where the work calls mainly for one-position welding; and where the layout and planning of the work are performed by others.

### **Welder, machine (arc or gas)**

(Welding machine operator)

Operates one or more types of arc or gas automatic welding machines designed to weld metal joints without manual manipulation of the welding electrode or torch. *Work involves:* Clamping work pieces onto machine; positioning electrode or torch over weld line at specified angle; treading filler wire from reel through feed rolls; filling hopper with flux; turning control knobs to synchronize movement of electrode or torch and feed of filler wire, and flux with speed of welding action; setting limit switch which automatically stops machine at end of weld; starting machine and observing welding action. Workers may be designated according

to the type of equipment used as gas-shielded arc welding machine operator, submerged arc welding machine operator, or gas welding machine operator.

### **Welder, machine (resistance)**

(Butt welder; flash welder; seam welder; spot welder)

Operates one or more types of resistance welding apparatus to weld (bond) together metal objects such as bars, pipes, and plates. Resistance welding is a process wherein an electric current is passed through the parts to be welded at the point of contact, and mechanical pressure is applied forcing the contact surfaces together at the points to be joined. Welding machines are generally designed according to type of weld performed and arrangement of welding surfaces of parts to be joined. Welds may be made on overlapping units in the form of one or more spots (spot welding) or lineally by using a rolling electrode (seam welding). Machine welding of units where the edges are brought together without lapping is referred to as butt welding.

*Class A. Work involves most of the following:* Working from layout or other specifications; knowledge of welding properties of a variety of metals and alloys; selecting and setting-up workholding fixtures and electrodes; determination of proper pressures, temperatures, timing, and flow of current; determination of number and spacing of welds; positioning and welding units with or without fixtures; using such handtools as hammers, pliers, files, and wrenches.

*Class B. Work involves:* Performing repetitive welding operations on standard units where current settings and electrodes are prescribed or set by others; using fixtures for positioning work or positioning by hand small parts requiring simple welding operations.

## **Maintenance**

### **Carpenter, maintenance**

Performs the carpentry duties necessary to construct and maintain in good repair building woodwork and equipment such as bins, cribs, counters, benches, partitions, doors, floors, stairs, casings, and trim made of wood in an establishment. *Work involves most of the following:* Planning and laying out of work from blueprints, drawings, models, or verbal instruction; using a variety of carpenter's handtools, portable power tools, and standard measuring instruments; making standard shop computations relating to dimensions of work; selecting materials necessary for the work. In

general, the work of the maintenance carpenter requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

### **Electricians, maintenance**

Performs a variety of electrical trade functions such as the installation, maintenance, or repair of equipment for the generating, distribution, or utilization of electric energy in an establishment. *Work involves most of the following:* Installing or repairing any of a variety of electrical equipment such as generators, transformers, switchboard, controllers, circuit breakers, motors, heating units, conduit systems, or other transmission equipment; working from blueprints, drawings, layout, or other specifications; locating and diagnosing trouble in the electrical system or equipment; working standard computations relating to load requirements of wiring or electrical equipment; using a variety of electrician's handtools and measuring and testing instruments. In general, the work of the maintenance electrician requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

### **Helper, maintenance trades**

Assists one or more workers in the skilled maintenance trades, by performing specific or general duties of lesser skill, such as keeping a worker supplied with materials and tools, cleaning working area, machine, and equipment; assisting worker by holding materials or tools, performing other unskilled tasks as directed by journeyman. The kind of work the helper is permitted to perform varies from trade to trade: In some trades the helper is confined to supplying, lifting, and holding materials and tools and cleaning working areas; and in others he is permitted to perform specialized machine operations, or parts of a trade that are also performed by workers on a full-time basis.

### **Machine-tool operator (toolroom)**

Specializes in operating one or more than one type of machine tool (e.g., jig borer, grinding machine, engine lathe, milling machine) to machine metal for use in making or maintaining jigs, fixtures, cutting tools, gauges, or metal dies or molds used in shaping or forming metal or nonmetallic material (e.g., plastic, plaster, rubber, glass). *Work typically involves:* Planning and performing difficult machining operations which require complicated setups or a high degree of accuracy; setting up machine tool or tools (e.g., install cutting

tools and adjust guides, stops, working tables, and other controls to handle the size of stock to be machined; determine proper feeds, speeds, tooling, and operation sequence or select those prescribed in drawings, blueprints, or layouts); using a variety of precision measuring instruments; making necessary adjustments during machining operation to achieve requisite dimensions to very close tolerances. May be required to select proper coolants and cutting and lubricating oils, to recognize when tools need dressing, and to dress tools. In general, the work of a machine-tool operator (toolroom) at the skill level called for in this classification requires extensive knowledge of machine-shop and toolroom practice usually acquired through considerable on the job training and experience.

### **Machinist, maintenance**

Produces replacement parts and new parts in making repairs of metal parts of mechanical equipment operated in an establishment. *Work involves most of the following:* Interpreting written instructions and specifications; planning and laying out of work; using a variety of machinist's handtools and precision measuring instruments; setting up and operating standard machine tools; shaping of metal parts to close tolerances; making standard shop computations relating to dimensions of work, tooling, feeds, and speeds of machining; knowledge of the working properties of the common metals; selecting standard materials, parts, and equipment required for his work; fitting and assembling parts into mechanical equipment. In general, the machinist's work normally requires a rounded training in machine-shop practice usually acquired through a formal apprenticeship or equivalent training and experience.

### **Mechanic, maintenance**

Repairs machinery or mechanical equipment of an establishment. *Work involves most of the following:* Examining machines and mechanical equipment to diagnose source of trouble; dismantling or partly dismantling machines and performing repairs that mainly involve the use of handtools in shaping and fitting parts; replacing broken or defective parts with items obtained from stock; ordering the production of a replacement part by a machine shop or sending of the machine to a machine shop for major repairs; preparing written specifications for major repairs or for the production of parts ordered from machine shop; reassembling machines; and making all necessary adjustments for operation. In general, the work of a maintenance mechanic requires rounded training and experience usually acquired through a formal apprentice-

ship or equivalent training and experience. Excluded from this classification are workers whose primary duties involve setting up or adjusting machines.

### **Millwright**

Installs new machines or heavy equipment and dismantles and installs machines or heavy equipment when changes in the plant layout are required. *Work involves most of the following:* Planning and laying out of the work; interpreting blueprints or other specifications; using a variety of handtools and rigging; making standard shop computations relating to stresses, strength of materials, and center of gravity; alining and balancing of equipment; selecting standard tools, equipment, and parts to be used; installing and maintaining in good order power transmission equipment such as drives.

### **Pipefitter, maintenance**

Installs or repairs water, steam, gas, or other types of pipe and pipe fittings in an establishment. *Work involves most of the following:* Laying out of work and measuring to locate position of pipe from drawings or other written specifications; cutting various sizes of pipe to correct lengths with chisel and hammer or oxyacetylene torch or pipe-cutting machines; threading pipe with stocks and dies; bending pipe by hand-driven or power-driven machines; assembling pipe with couplings and fastening pipe to hangers; making standard shop computations relating to pressures, flow, and sizes of pipe required; making standard tests to determine whether finished pipes meet specifications. In general, the work of the maintenance pipefitter requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience. *Workers primarily engaged in installing and repairing building sanitation or heating systems are excluded.*

### **Tool and die maker**

(Die maker; jig maker; tool maker; fixture maker; gauge maker)

Constructs and repairs machine-shop tools, gauges, jigs, fixtures, or dies for forgings, punching, and other metal-forming work. *Work involves most of the following:* Planning and laying out of work from models, blueprints, drawings, or other oral and written specifications; using a variety of tool and die maker's handtools and precision measuring instruments; understanding of the working properties of common metals and alloys; setting up and operating of machine tools and related

equipment; making necessary shop computations relating to dimensions of work, speeds, feeds, and tooling of machines; heat treating of metal parts during fabrication as well as of finished tools and dies to achieve required qualities; working to close tolerances; fitting and assembling of parts to prescribed tolerances and allowances; selecting appropriate materials, tools, and processes. In general, the tool and die maker's work requires a rounded training in machine-shop and tool-room practice usually acquired through a formal apprenticeship or equivalent training and experience.

### **Welder, maintenance**

Fuses (weld) metal objects by means of the various types of welding apparatus to repair broken or cracked metal objects. *Work requires most of the following:* Planning and laying out of work from drawings, blueprints, or other written specifications; knowledge of welding properties of a variety of metals and alloys; welding high pressure vessels or other objects involving critical safety and load requirements; working from a variety of positions.

## **Material movement and service**

### **Crane operator**

Operates various types of cranes to hoist, move, and place materials, machines, and products about a shipyard.

For wage study purposes, crane operators are classified by type of crane as follows:

*Electric bridge (traveling) crane*

*Gantry crane*

*Mobile (truck) crane*

*Other (including combination of types)*

### **Guard**

Performs routine police duties, either at fixed post or on tour, maintaining order, using arms or force where necessary. *Includes guards who are stationed at gate and check on identity of employees and other persons entering.*

### **Janitor, porter, or cleaner**

Cleans and keeps in an orderly condition factory working areas and washrooms, or premises of an office, or other establishment. *Duties involve a combination of the following:* Sweeping, mopping or scrubbing, and

polishing floors; removing chips, trash, and other refuse; dusting equipment, furniture, or fixtures; polishing metal fixtures or trimmings; providing supplies and minor maintenance services; cleaning lavatories, showers, and restrooms. *Workers who specialize in window washing are excluded.*

### **Laborer, material handling**

A worker employed in a warehouse, manufacturing plant, store, or other establishment *whose duties involve one or more of the following:* Loading and unloading various materials and merchandise on or from freight cars, trucks, or other transporting devices; unpacking, shelving, or placing materials or merchandise in proper storage location; transporting materials or merchandise by hand, truck, car, or wheelbarrow. *Longshore workers who load and unload ships are excluded.*

### **Power-truck operator**

Operates a manually controlled gasoline- or electric-powered truck or tractor to transport goods and materials of all kinds about a warehouse, manufacturing plant, or other establishment.

For wage study purposes, workers are classified by type of power-truck as follows:

Forklift operator

Power-truck operator (other than forklift)

### **Truckdriver**

Drives a truck within a city or industrial area to transport materials, merchandise, equipment, or workers between various types of establishments such as: Manufacturing plants, freight depots, warehouses, wholesale and retail establishments. May also load or unload truck with or without helpers, make minor mechanical repairs, and keep truck in good working order. *Over-the-road drivers are excluded.*



# Industry Wages Studies

The most recent reports providing occupational wage data for industries included in the Bureau's program of industry wage surveys since 1960 are listed below. Copies are for sale from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or from any of its regional sales offices, and from the regional

offices of the Bureau of Labor Statistics shown on the inside back cover. Copies that are out of stock are available for reference purposes at leading public, college, or university libraries, or at the Bureau's Washington or regional offices.

## *Manufacturing*

Basic Iron and Steel, 1972. BLS Bulletin 1839  
Candy and Other Confectionery Products, 1975. BLS Bulletin 1939  
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Cigarette Manufacturing, 1976. BLS Bulletin 1944  
Corrugated and Solid Fiber Boxes, 1976. BLS Bulletin 1921  
Fabricated Structural Steel, 1974. BLS Bulletin 1935  
Fertilizer Manufacturing, 1971. BLS Bulletin 1763  
Flour and Other Grain Mill Products, 1972. BLS Bulletin 1803  
Fluid Milk Industry, 1973. BLS Bulletin 1871  
Footwear, 1975. BLS Bulletin 1946  
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Leather Tanning and Finishing, 1973. BLS Bulletin 1835  
Machinery Manufacturing, 1974. BLS Bulletin 1929  
Meat Products, 1974. BLS Bulletin 1896  
Men's and Boys' Separate Trousers, 1974. BLS Bulletin 1906  
Men's and Boys' Shirts (Except Work Shirts) and Nightwear, 1974. BLS Bulletin 1901  
Men's and Boys' Suits and Coats, 1976. BLS Bulletin 1962  
Miscellaneous Plastics Products, 1974. BLS Bulletin 1914  
Motor Vehicles and Parts, 1973-74. BLS Bulletin 1912  
Nonferrous Foundries, 1975. BLS Bulletin 1952  
Paints and Varnishes, 1970. BLS Bulletin 1739  
Paperboard Containers and Boxes, 1970. BLS Bulletin 1719  
Petroleum Refining, 1976. BLS Bulletin 1948  
Pressed or Blown Glass and Glassware, 1975. BLS Bulletin 1923  
Pulp, Paper, and Paperboard Mills, 1972. BLS Bulletin 1844  
Shipbuilding and Repairing, 1976. BLS Bulletin 1968  
Southern Sawmills and Planing Mills, 1969. BLS Bulletin 1694  
Structural Clay Products, 1975. BLS Bulletin 1942  
Synthetic Fibers, 1970. BLS Bulletin 1740  
Textile Dyeing and Finishing, 1976. BLS Bulletin 1967

## *Manufacturing—Continued*

Textiles, 1975. BLS Bulletin 1945  
Wages and Demographic Characteristics in Work Clothing Manufacturing, 1972. BLS Bulletin 1858  
West Coast Sawmilling, 1969. BLS Bulletin 1704  
Women's and Misses' Coats and Suits, 1970. BLS Bulletin 1728  
Women's and Misses' Dresses, 1974. BLS Bulletin 1908  
Wood Household Furniture, Except Upholstered, 1974. BLS Bulletin 1930

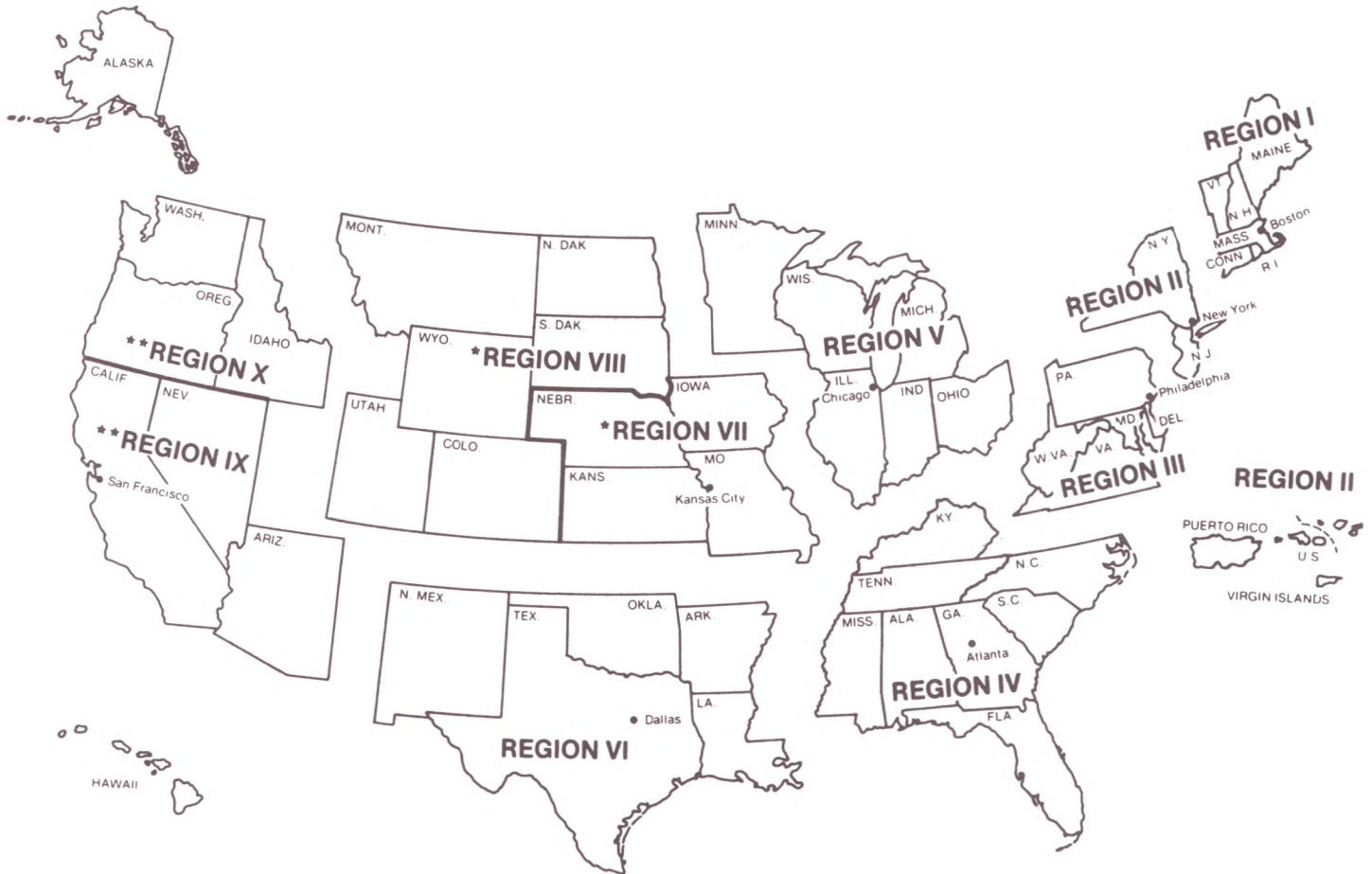
## *Nonmanufacturing*

Appliance Repair Shops, 1975. BLS Bulletin 1936  
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Communications, 1975. BLS Bulletin 1954  
Contract Cleaning Services, 1974. BLS Bulletin 1916  
Contract Construction, 1973. BLS Bulletin 1911  
Crude Petroleum and Natural Gas Production, 1972. BLS Bulletin 1797  
Department Stores, 1973. BLS Bulletin 1869  
Educational Institutions: Nonteaching Employees, 1968-69. BLS Bulletin 1671  
Electric and Gas Utilities, 1972. BLS Bulletin 1834  
Hospitals, 1975. BLS Bulletin 1949  
Hotels and Motels, 1973. BLS Bulletin 1883  
Laundry and Cleaning Services, 1968. BLS Bulletin 1645<sup>1</sup>  
Life Insurance, 1971. BLS Bulletin 1791  
Metal Mining, 1972. BLS Bulletin 1820  
Nursing Homes and Related Facilities 1976. BLS Bulletin 1964  
Scheduled Airlines, 1975. BLS Bulletin 1951  
Wages and Tips in Restaurants and Hotels 1970. BLS Bulletin 1712

<sup>1</sup> Bulletin out of stock.

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