

Industry Wage Survey: Shipbuilding and Repairing, October 1986



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U.S. Department of Labor
Ann McLaughlin, Secretary

Bureau of Labor Statistics
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Preface

This bulletin summarizes the results of a Bureau of Labor Statistics survey of occupational wages and employee benefits in the shipbuilding and repairing industry in October 1986. A similar study of shipyards was conducted in September 1981.

Summary releases were issued earlier for selected locations: The Atlantic Coast, Gulf Coast, Great Lakes, and Pacific Coast. Copies of the summaries are available upon request from the Bureau or any of its regional offices.

This study was conducted in the Bureau's Office of Wages

and Industrial Relations. David G. Larson of the Division of Occupational Pay and Employee Benefit Levels analyzed the survey data and prepared this bulletin. Fieldwork for the survey was directed by the Assistant Regional Commissioners for Operations.

Other industry wage survey reports are listed at the end of this bulletin along with information on how to obtain them.

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Shipbuilding and Repairing, October 1986

Earnings and benefits

Straight-time earnings of production and related workers in the private shipbuilding and repairing industry averaged \$10.67 an hour in October 1986 (table 1).¹ Reflecting both the absence of incentive pay systems and the prevalence of single-rate pay plans in this highly unionized industry, individual earnings varied relatively little from the industrywide average (table 3). The index of dispersion, a statistical measure of such variation, was 17—among the lowest in the Bureau's industry wage survey program.²

In October 1986, the industry's average hourly pay level was 19 percent above the \$8.97 recorded by a similar survey in September 1981.³ This compares with a 24-percent rise in the wage and salary component of the Bureau's Employment Cost Index for durable goods manufacturing between the third quarters of 1981 and 1986. About one-fifth of the workers were in shipyards with formal plans to adjust wage rates periodically in keeping with changes in the BLS Consumer Price Index (table 18).

October 1986 pay levels varied somewhat by size of shipyard and union status. Workers in shipyards having 2,500 workers or more (nearly seven-tenths of the work force) aver-

aged 7 percent more than workers in smaller shipyards (\$10.90 and \$10.18). Workers in shipyards where a majority of the production workers were covered by labor-management contracts (four-fifths of the work force) averaged \$11.01 an hour, 21 percent more than those in nonunion yards.

Regionally, workers in shipyards at Atlantic Coast ports, nearly three-fifths of the work force, averaged \$10.39 an hour in October 1986. Averages in other shipyards around the country were: \$10.34 on the Gulf Coast, \$9.87 on the Great Lakes, and \$12.66 on the Pacific Coast. Virtually all workers were in metropolitan areas.

Twenty-seven occupational categories, selected to represent the range of skills required in the industry,⁴ accounted for three-fifths of the production work force. Nationwide, hourly earnings averaged from \$7.54 for marine trades helpers to \$11.89 for electronics technicians and \$12.01 for loft workers (tables 2 and 4). Hand welders were the most populous occupational group studied separately; those working under conditions involving critical safety and load requirements (class A) averaged \$11.43 an hour, compared with \$11.03 an hour for those who performed less skilled hand-welding operations (class B).

Among regions, occupational averages were highest on the Pacific Coast. For seven jobs for which regional comparisons could be made, workers in Pacific ports averaged 12 to 27 percent more than their counterparts in the next highest paying region. Differences in occupational earnings among the Atlantic, Gulf Coast, and Great Lakes ports were slight, and no consistent pattern could be found from the few comparisons that could be made.

Occupational earnings often were highly concentrated, especially within individual regions (tables 5-8). For example, three-fifths of the 882 shipfitters in Gulf Coast ports earned between \$10 and \$10.50 an hour. On the Pacific Coast, nearly half of the 880 shipfitters and 880 hand welders earned between \$13.25 and \$13.75.

Nearly all shipyards provided paid holidays, usually 11 to 13 days a year (table 15). Most workers had provisions for 11 or 13 days on the Atlantic Coast, 8 or 12 days on the Gulf Coast, and 10 to 12 days on the Great Lakes and the Pacific Coast.

All shipyards studied provided paid vacations. Typical pro-

¹ The survey excluded all Federal Government facilities and any shipyard with fewer than 100 workers. A description of the pay system in seven Naval shipyards, which employed 62,488 workers, is included in appendix A.

Appendix B contains the scope and method of the survey and definitions of terms used in this bulletin. Earnings data exclude sea-trial pay; hazard pay; and premium pay for overtime and for work on weekends, holidays, and late shifts. Cost-of-living pay increases (but not bonuses) were included as part of the workers' regular pay. Excluded were performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing payments, attendance bonuses, Christmas or yearend bonuses and other nonproduction bonuses.

² The index of dispersion is computed by dividing the interquartile range (the difference between the third and first quartiles) by the median (the second quartile) and multiplying by 100. For a detailed analysis of wage dispersion by industry, see Carl Barsky and Martin E. Personick, "Measuring Wage Dispersion: Pay Ranges Reflect Industry Traits," *Monthly Labor Review*, April 1981, pp. 3541.

³ The October 1986 survey was not strictly comparable with the 1981 survey (*Industry Wage Survey: Shipbuilding and Repairing, September 1981*, Bulletin 2161) because the 1986 survey had a lower minimum establishment size—100 rather than 250 workers. However, shipyards with 100 to 249 workers accounted for only 6 percent of the 1986 survey work force. Using a 250 minimum cutoff for both years, the 1981-86 wage increase was 20 percent.

⁴ See appendix C for occupational descriptions.

visions were 1 week of pay after 1 year of service, 2 weeks after 5 years, 3 weeks after 12 years, and 4 weeks after 20 years (table 16). Vacation benefits varied among the regions, particularly after longer periods of service. For example, after 25 years of service, all workers in the Great Lakes region and half of those in the Atlantic Coast region received 5 weeks or more of vacation pay, whereas all of the workers in the Gulf and Pacific Coast regions received less than 5 weeks.

All workers were in shipyards providing at least part of the cost of life insurance and a variety of basic health insurance plans (table 17). In addition, establishments offered accidental death and dismemberment insurance to four-fifths of the workers and short-term protection against loss of income due to illness or accident to about three-fourths. Dental and prescription drugs insurance was available to about half of the shipyard workers; long-term disability and vision care insurance applied to one-tenth.

Retirement plans, virtually always pensions and usually financed entirely by employers, applied to nine-tenths of the workers. Regionally, the incidence of retirement plans varied from all workers in Atlantic and Pacific Coast shipyards to two-thirds of those on the Gulf Coast and just over two-fifths along the Great Lakes.

Approximately four-fifths of the production workers were in shipyards that guaranteed payment for employees when sufficient work is not available, under the following provisions: (1) call-in (call-back) pay for employees recalled to work after shift completion, and (2) daily reporting pay—a minimum amount of pay (e.g., 4 hours)—for reporting to the job (table 18). Employee compensation plans for time off to serve on a jury or to attend the funeral of specified family members applied to seven-eighths and seven-tenths of the workers, respectively.

Industry characteristics

The survey of 81 private shipyards covered establishments primarily engaged in building and repairing ships, barges, and lighters, whether propelled by motor or towed. Shipyards converting and altering ships were also included. The survey excluded separate auxiliary units, such as central offices and warehouses; establishments fabricating structural assemblies; subcontractors; U.S. Navy shipyards; and yards employing fewer than 100 workers.

The October 1986 survey estimated 65,309 production workers in the industry—down 40 percent since the September 1981 study.⁵ In 1986, nearly three-fifths of the workers were in Atlantic shipyards. The Gulf Coast accounted for one-fifth of the workers; the Pacific Coast, nearly one-sixth; and the Great Lakes, 4 percent. (The remaining few hundred workers were in five shipyards located along major inland waterways, principally the Mississippi and Ohio Rivers.)

⁵ See footnote 3. The 1981-86 employment decline was 44 percent, using a 250 minimum size for both survey years.

About four-fifths of the workers were in yards primarily building military vessels. U.S. Navy shipyards, not included in this survey, maintain and repair Navy and Coast Guard ships, but contract with private shipbuilders for initial construction. (See appendix A for a description of pay practices in U.S. Navy shipyards.) Nearly one-sixth of the production workers were in yards primarily building or repairing merchant vessels of 1,000 gross tons or more.⁶ The remaining workers were in yards mainly constructing or repairing off-shore drilling rigs and platforms, non-self-propelled vessels (e.g., barges), and merchant vessels under 1,000 gross tons.

Shipyards varied in size, but most employees were in larger yards, those having 2,500 employees or more. About one-third of the workers were employed in yards with fewer than 2,500 workers.

All workers were paid on a time basis under formal systems (table 9). About three-fourths of the production workers were employed in yards that paid single rates for individual occupations and virtually all the rest were under formal range-of-rate plans. All surveyed shipyards had a 40-hour workweek for full-time workers on day shifts.

A large majority of workers were in shipyards with formal provisions for late shifts (table 10). About one-sixth were actually employed on second shifts in October 1986; one-tenth worked on third shifts. The most common differential was a 7-percent addition to day rates for second and third shifts (table 11).

Shipyards employing two-thirds of the production workforce had formal provisions for premium pay for hazardous work, that is, unpleasant or dangerous conditions (table 12). Such work includes working in uncleaned oil tanks and dismantling unusually dirty diesel engines. During the survey period, however, only one-tenth of the workers actually faced conditions calling for hazardous-pay premiums (table 13). Premiums were generally cents-per-hour additions to base pay, or a full day's pay for reduced hours, often varying according to the nature of the hazardous situation or job performed.

Three-fifths of the workers were in shipyards with special pay provisions for sea-trial work aboard a ship after it leaves the port (table 14). Fewer than 1 percent, however, were actually in sea-trial pay status during the period studied. Types and amounts of sea-trial pay provisions varied widely among shipyards. Examples include: Pay for a guaranteed minimum number of hours and 50- or 100-percent premiums for hours actually worked, in lieu of premium pay for overtime or shift work, or both.

Union contracts covered most shipyard workers (table 1). Establishments having collective bargaining agreements

⁶ For a detailed account of trends in shipbuilding and repair, see U.S. Department of Commerce, *1987 U.S. Industrial Outlook*, ch. 38. This source notes that there were no new orders placed with U.S. shipyards during the first 9 months of 1986 for commercial vessels of 1,000 gross tons or more; 9 large commercial ships were under construction in October 1986 and 77 major Naval vessels were being built or were on order at that time.

covering a majority of their workers accounted for about four-fifths of the production workers in the survey. Nonunion workers were located primarily in Atlantic and Gulf Coast yards. The International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers, and Helpers; the International Association of Machinists; and the International Union of Marine and Shipbuilding Workers of America (all AFL-CIO affiliates) were the principal unions in the industry.

Also studied was the use of temporary help and the extent to which services were contracted out. Slightly less than one-fourth of the shipyard workers were in establishments regularly using temporary help services in lieu of new hires.

Text table 1 shows the contract services selected for separate study. Trucking was the single activity most commonly contracted out; contract truckers were used by establishments employing slightly over one-fourth of the industry's work force. Other services separately identified, such as accounting, computer processing, and machine maintenance,

were seldom contracted out; in contrast, guard, food, and other services studied as a group, were contracted out by shipyards employing just over one-third of the work force.

Text table 1. Percent of production workers employed in shipbuilding and repairing establishments which contracted out selected services, October 1986

Contract service ¹	Percent of production workers
Trucking	25-29
Machine maintenance	5-9
Janitorial	10-14
Accounting	5-9
Computer processing	5-9
Secretarial	10-14
Engineering/drafting	10-14
Other (e.g., guard, food, etc.)	35-39

¹ All or part of service contracted out.

Table 1. Average hourly earnings: By selected characteristics(Number of production workers and average straight-time hourly earnings¹ in shipyards by selected characteristics, United States and selected ports, October 1986)

Characteristic	United States ²		Atlantic Coast		Gulf Coast		Great Lakes		Pacific Coast	
	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings
All production workers	65,309	\$10.67	38,531	\$10.39	13,959	\$10.34	2,791	\$9.87	9,241	\$12.66
Size of establishment:										
Under 2,500 workers	20,578	10.18	9,749	9.23	2,354	9.58	2,791	9.87	4,897	12.63
2,500 workers or more	44,731	10.90	-	-	-	-	-	-	-	-
Labor-management contracts:										
Establishments with--										
Majority of workers covered	53,748	11.01	33,349	10.69	-	-	-	-	9,241	12.66
None or minority of workers covered	11,561	9.09	5,182	8.51	-	-	-	-	-	-

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.² Includes data for ports in addition to those shown separately.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria.

Table 2. Occupational earnings averages: All establishments

(Number of production workers and average straight-time hourly earnings¹ in selected occupations in shipyards, United States and selected ports, October 1986)

Department and occupation	United States ²		Atlantic Coast		Gulf Coast		Great Lakes		Pacific Coast	
	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings
Production										
Electronics technicians	816	\$11.89	-	-	-	-	-	-	-	-
Electronics technicians II	306	11.91	-	-	-	-	-	-	-	-
Electronics technicians III	285	12.68	-	-	-	-	-	-	-	-
Inspectors:										
Class B	197	11.64	90	\$11.44	-	-	-	-	-	-
Insulators	608	11.16	460	11.19	-	-	-	-	-	-
Loft workers	116	12.01	50	10.49	-	-	-	-	-	-
Machine-tool operators, production	804	11.34	730	11.19	-	-	-	-	46	\$13.09
Class A	724	11.44	-	-	-	-	-	-	-	-
Class B	60	10.09	46	9.47	-	-	-	-	-	-
Class C	20	11.31	10	9.14	-	-	-	-	-	-
Machinists, production	792	11.16	-	-	112	\$11.05	-	-	135	13.16
Marine electricians	3,576	11.31	1,911	10.80	-	-	199	\$10.91	690	13.39
Marine machinists	2,851	11.36	1,875	11.06	415	11.14	-	-	509	12.69
Marine pipefitters	3,661	11.41	1,632	10.99	-	-	257	11.04	748	12.93
Marine riggers	1,397	11.14	962	10.69	-	-	-	-	249	12.99
Marine trades helpers	1,978	7.54	-	-	-	-	-	-	-	-
Painters	3,363	11.14	-	-	893	10.78	125	10.59	433	13.25
Sheet-metal workers	2,312	11.69	1,398	11.44	-	-	-	-	459	12.95
Shipfitters	4,339	11.36	2,169	11.28	882	10.52	-	-	880	12.76
Shipwrights	1,915	11.42	-	-	-	-	-	-	-	-
Welders, hand	5,558	11.32	-	-	1,030	9.99	-	-	880	12.86
Class A	4,011	11.43	-	-	584	10.81	-	-	-	-
Class B	1,547	11.03	141	10.30	446	8.92	-	-	-	-
Welders, machine (arc or gas)	1,290	11.44	-	-	-	-	-	-	-	-
Maintenance										
Carpenters, maintenance	104	11.22	93	11.20	-	-	-	-	-	-
Electricians, maintenance	250	11.34	183	11.35	-	-	-	-	17	13.18
Mechanics, maintenance	219	10.79	-	-	-	-	-	-	-	-
Pipefitters, maintenance	176	11.53	148	11.52	-	-	-	-	-	-
Welders, maintenance	69	10.90	58	10.70	-	-	-	-	-	-
Material movement and service										
Crane operators	709	11.54	345	11.59	196	10.96	55	11.32	97	12.97
Electric bridge (traveling)	200	11.61	-	-	-	-	-	-	-	-
Gantry crane	216	11.58	137	11.88	40	10.66	-	-	-	-
Other (including combinations)	260	11.48	-	-	-	-	50	11.38	36	13.47
Guards	388	8.14	-	-	-	-	-	-	44	10.86
Guards I	170	7.03	-	-	-	-	-	-	-	-
Guards II	130	10.29	-	-	-	-	-	-	-	-
Janitors, porters, or cleaners	682	8.94	-	-	-	-	-	-	41	12.06
Power-truck operators	366	10.36	-	-	-	-	-	-	-	-
Forklift operators	295	10.20	-	-	-	-	-	-	-	-
Truckdrivers	270	10.65	114	10.52	60	8.50	-	-	48	13.37

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

² Includes data for ports in addition to those shown separately.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria. Overall occupation may include data for subclasses not shown separately.

Table 3. Earnings distribution: All production workers

(Percent distribution of workers in shipyards by straight-time hourly earnings,¹ United States and selected ports, October 1986)

Hourly earnings	United States ²	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Number of workers	65,309	38,531	13,959	2,791	9,241
Average (mean) hourly earnings ³	\$10.67	\$10.39	\$10.34	\$9.87	\$12.66
Median ³	11.38	11.47	11.28	10.66	13.45
Middle range: ³					
First quartile	9.82	9.32	9.74	8.79	12.25
Third quartile	11.75	11.67	11.37	11.54	13.50
Total	100.0	100.0	100.0	100.0	100.0
Under \$5.50	2.1	2.7	2.2	1.6	-
\$5.50 and under \$5.75 .....	.6	.5	.7	2.7	-
\$5.75 and under \$6.00 .....	.6	.4	1.0	3.9	-
\$6.00 and under \$6.25 .....	.9	1.3	.2	2.8	-
\$6.25 and under \$6.50 .....	.9	1.2	.3	1.8	.1
\$6.50 and under \$6.75 .....	.8	1.0	.1	2.9	-
\$6.75 and under \$7.00 .....	.5	.6	.2	1.4	-
\$7.00 and under \$7.25	1.2	1.5	1.2	.5	-
\$7.25 and under \$7.50	1.1	1.5	.4	2.0	-
\$7.50 and under \$7.75	1.4	1.0	.9	.6	4.3
\$7.75 and under \$8.00	3.1	4.5	1.6	.6	-
\$8.00 and under \$8.25	1.3	1.7	1.1	1.0	-
\$8.25 and under \$8.50 .....	.9	1.1	.9	1.0	-
\$8.50 and under \$8.75	2.0	2.2	3.0	2.0	-
\$8.75 and under \$9.00	1.6	1.2	2.9	1.7	.1
\$9.00 and under \$9.50	3.7	3.0	7.3	6.8	.4
\$9.50 and under \$10.00	3.6	3.9	4.6	5.2	.8
\$10.00 and under \$10.50	6.0	2.3	16.8	8.1	(*)
\$10.50 and under \$11.00	7.3	9.7	2.4	20.5	1.0
\$11.00 and under \$11.50	21.3	20.1	38.3	7.6	5.9
\$11.50 and under \$12.00	22.2	32.2	10.4	10.0	3.6
\$12.00 and under \$12.50	7.6	4.7	2.7	15.2	25.3
\$12.50 and under \$13.00	1.0	.7	.5	-	3.8
\$13.00 and under \$13.50	3.2	.1	.1	-	22.0
\$13.50 and under \$14.00	4.3	.7	.5	-	26.8
\$14.00 and over .....	.9	(*)	-	-	6.1

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

² Includes data for ports in addition to those shown separately.

³ See appendix B for definitions and methods used to compute means, medians,

and middle ranges.

⁴ Less than 0.05 percent.

NOTE: Because of rounding, sums of individual items may not equal 100. Dashes indicate that no data were reported.

Table 5. Occupational earnings averages: Atlantic Coast

(Percent distribution of workers in selected occupations in shipyards by straight-time hourly earnings,¹ October 1986)

Department and occupation	Number of workers	Average (mean) hourly earnings	Percent of workers receiving straight-time hourly earnings (in dollars) of—																									
			Under 7.00	7.00-7.25	7.25-7.50	7.50-7.75	7.75-8.00	8.00-8.25	8.25-8.50	8.50-8.75	8.75-9.00	9.00-9.25	9.25-9.50	9.50-9.75	9.75-10.00	10.00-10.25	10.25-10.50	10.50-10.75	10.75-11.00	11.00-11.25	11.25-11.50	11.50-11.75	11.75-12.00	12.00-12.25	12.25-12.50	12.50-12.75	12.75-13.00	13.00 and over
All production workers	38,531	\$10.39	8	2	2	1	5	2	1	2	1	2	1	2	2	1	1	6	4	3	17	21	11	4	1	(?)	(?)	1
Production																												
Inspectors:																												
Class B	90	11.44	-	-	-	-	-	-	-	-	-	-	-	-	-	4	2	2	4	-	31	56	-	-	-	-	-	-
Insulators	460	11.19	-	-	-	-	-	-	-	2	3	-	-	-	1	1	(?)	40	2	(?)	48	3	-	-	-	-	-	-
Loft workers	50	10.49	³ 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	4	12	16	12	-	-	-	-
Machine-tool operators, production	730	11.19	-	(?)	-	(?)	-	1	2	(?)	1	3	-	2	(?)	2	2	6	1	5	31	32	13	-	-	-	-	-
Class B	46	9.47	-	4	-	4	-	11	30	4	-	-	-	-	-	-	-	15	30	-	-	-	-	-	-	-	-	-
Class C	10	9.14	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marine electricians	1,911	10.80	3	1	(?)	2	1	1	1	4	3	1	(?)	2	2	1	3	6	3	8	25	28	6	(?)	-	1	-	-
Marine machinists	1,875	11.06	2	(?)	1	1	(?)	1	1	1	2	1	(?)	(?)	3	1	1	(?)	6	2	32	38	5	1	-	(?)	-	-
Marine pipefitters	1,632	10.99	-	-	-	1	-	(?)	(?)	1	6	1	-	3	1	1	1	12	5	4	47	10	5	(?)	-	-	-	-
Marine riggers	962	10.69	4	1	-	2	1	1	2	1	3	(?)	1	3	1	1	1	26	4	2	6	39	3	(?)	-	1	-	-
Sheet-metal workers	1,398	11.44	-	-	-	-	-	-	(?)	2	-	(?)	-	3	2	(?)	1	5	(?)	3	35	8	41	(?)	-	-	-	-
Shipfitters	2,169	11.28	-	-	-	-	-	-	(?)	2	-	(?)	(?)	2	2	1	2	9	5	5	25	40	7	(?)	-	-	-	-
Welders, hand:																												
Class B	141	10.30	-	-	-	-	-	-	-	-	9	18	-	-	1	4	-	-	58	10	-	-	-	-	-	-	-	-
Maintenance																												
Carpenters, maintenance	93	11.20	-	-	-	5	-	-	-	-	5	-	-	-	-	-	-	-	-	2	46	30	11	-	-	-	-	-
Electricians, maintenance	183	11.35	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	8	56	24	4	-	-	-	3	-	
Pipefitters, maintenance	148	11.52	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	5	46	30	16	-	-	-	-	-	
Welders, maintenance	58	10.70	-	-	-	-	-	-	17	17	-	-	-	-	-	9	-	-	-	-	9	7	21	21	-	-	-	
Material movement and service																												
Crane operators	345	11.59	-	-	-	-	-	1	3	-	-	-	2	-	-	2	-	15	1	17	24	13	-	1	1	20	-	
Gantry crane	137	11.88	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-	37	-	-	-	1	-	1	3	51	-	
Truckdrivers	114	10.52	4	-	-	-	9	-	-	-	-	-	-	-	-	2	45	-	4	-	37	-	-	-	-	-	-	

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

² Less than 0.5 percent.

³ All workers were at \$5.75 and under \$6.

NOTE: Because of rounding, sums of individual items may not equal 100. Overall occupation may include data for subclassifications not shown separately. Dashes indicate that no data were reported.

Table 6. Occupational earnings averages: Gulf Coast

(Percent distribution of workers in selected occupations in shipyards by straight-time hourly earnings,¹ October 1986)

Department and occupation	Number of workers	Average (mean) hourly earnings	Percent of workers receiving straight-time hourly earnings (in dollars) of—																									
			Under 6.25	6.25-6.50	6.50-6.75	6.75-7.00	7.00-7.25	7.25-7.50	7.50-7.75	7.75-8.00	8.00-8.25	8.25-8.50	8.50-8.75	8.75-9.00	9.00-9.25	9.25-9.50	9.50-9.75	9.75-10.00	10.00-10.25	10.25-10.50	10.50-10.75	10.75-11.00	11.00-11.25	11.25-11.50	11.50-11.75	11.75-12.00	12.00-12.25	12.25 and over
All production workers	13,959	\$10.34	4	(²)	(²)	(²)	1	(²)	1	2	1	1	3	3	4	3	1	3	5	12	2	1	(²)	38	5	5	3	1
Production																												
Machinists, production	112	11.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	6	-	-	-	65	-	-	7	-
Marine machinists	415	11.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	17	-	-	-	50	-	-	17	3
Painters	893	10.78	-	-	-	-	-	(²)	-	2	-	-	3	-	3	1	1	-	15	9	-	-	-	63	-	-	3	-
Shipfitters	882	10.52	-	-	-	-	(²)	-	-	-	1	2	-	5	-	1	-	12	49	-	-	-	26	-	-	2	1	
Welders, hand	1,030	9.99	-	-	-	-	-	-	3	(²)	2	-	7	10	12	8	2	7	11	2	-	3	1	31	1	-	1	1
Class A	584	10.81	-	-	-	-	-	-	-	-	-	-	1	-	9	-	3	-	20	3	-	5	1	55	1	-	2	1
Class B	446	8.92	-	-	-	-	-	-	7	1	6	-	16	23	15	18	-	15	-	-	-	-	-	-	-	-	-	-
Material movement and service																												
Crane operators	196	10.96	3	-	-	-	-	-	-	-	-	-	10	1	-	1	-	7	-	4	-	-	-	46	3	19	5	3
Gantry crane	40	10.66	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	58	5	-
Truckdrivers	60	8.50	³ 25	-	-	-	10	-	-	-	-	-	-	-	5	-	15	3	38	-	-	-	-	-	-	-	-	-

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

² Less than 0.5 percent.

³ All workers were at \$5.50 and under \$5.75.

NOTE: Because of rounding, sums of individual items may not equal 100. Overall occupation may include data for subclassifications not shown separately. Dashes indicate that no data were reported.

Table 7. Occupational earnings averages: Great Lakes

(Percent distribution of workers in selected occupations in shipyards by straight-time hourly earnings,¹ October 1986)

Department and occupation	Number of workers	Average (mean) hourly earnings	Percent of workers receiving straight-time hourly earnings (in dollars) of—																										
			Under 6.00	6.00-6.25	6.25-6.50	6.50-6.75	6.75-7.00	7.00-7.25	7.25-7.50	7.50-7.75	7.75-8.00	8.00-8.25	8.25-8.50	8.50-8.75	8.75-9.00	9.00-9.25	9.25-9.50	9.50-9.75	9.75-10.00	10.00-10.25	10.25-10.50	10.50-10.75	10.75-11.00	11.00-11.25	11.25-11.50	11.50-11.75	11.75-12.00	12.00-12.25	12.25 and over
All production workers	2,791	\$9.87	8	3	2	3	1	1	2	1	1	1	1	2	2	5	2	2	3	3	5	13	8	3	5	7	3	(²)	15
Production																													
Marine electricians	199	10.91	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	5	12	14	21	4	12	9	6	-	9
Marine pipefitters	257	11.04	-	-	-	-	-	-	-	-	-	-	-	(²)	9	(²)	-	1	3	11	22	8	8	2	7	5	-	23	
Painters	125	10.59	-	-	-	-	-	-	14	2	1	1	1	2	-	-	4	4	2	4	2	10	3	6	6	6	-	32	
Material movement and service																													
Crane operators	55	11.32	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4	2	2	27	15	4	-	2	4	-	38	
Other (including combinations) ...	50	11.38	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4	2	2	22	14	4	-	2	4	-	42	

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

² Less than 0.5 percent.

NOTE: Because of rounding, sums of individual items may not equal 100. Overall occupation may include data for subclassifications not shown separately. Dashes indicate that no data were reported.

Table 8. Occupational earnings averages: Pacific Coast

(Percent distribution of workers in selected occupations in shipyards by straight-time hourly earnings,¹ October 1986)

Department and occupation	Number of workers	Average (mean) hourly earnings	Percent of workers receiving straight-time hourly earnings (in dollars) of—																
			Under 10.50	10.50-10.75	10.75-11.00	11.00-11.25	11.25-11.50	11.50-11.75	11.75-12.00	12.00-12.25	12.25-12.50	12.50-12.75	12.75-13.00	13.00-13.25	13.25-13.50	13.50-13.75	13.75-14.00	14.00-14.25	14.25 and over
All production workers	9,241	\$12.66	6	(²)	1	5	1	2	2	6	19	3	1	5	17	20	7	4	2
Production																			
Machine-tool operators, production	46	13.09	-	-	-	-	-	-	22	-	-	7	-	-	22	50	-	-	-
Machinists, production	135	13.16	-	-	-	-	-	-	-	13	16	-	-	-	7	55	10	-	-
Marine electricians	690	13.39	-	-	-	-	-	3	-	3	-	6	-	-	33	41	15	-	-
Marine machinists	509	12.69	-	-	1	11	-	7	-	12	17	-	-	-	16	33	4	-	-
Marine pipefitters	748	12.93	-	-	-	-	-	1	-	6	38	-	-	-	12	36	7	-	-
Marine riggers	249	12.99	-	-	1	11	-	-	-	-	19	-	-	-	27	35	8	-	-
Painters	433	13.25	-	-	-	2	-	-	-	-	9	17	-	-	27	27	18	-	-
Sheet-metal workers	459	12.95	-	-	-	8	-	2	-	-	30	-	-	-	26	13	21	-	-
Shipfitters	880	12.76	-	-	-	9	-	-	-	9	31	-	-	-	18	27	5	-	-
Welders, hand	880	12.86	-	-	-	-	-	-	-	-	54	-	-	-	30	16	-	-	-
Maintenance																			
Electricians, maintenance	17	13.18	-	-	-	-	-	-	-	-	41	-	-	-	-	18	41	-	-
Material movement and service																			
Crane operators	97	12.97	-	-	-	19	-	-	-	9	7	-	7	-	4	25	4	25	-
Other (including combinations)	36	13.47	-	-	-	-	-	-	-	-	19	-	-	-	-	67	-	14	-
Guards	44	10.86	³ 27	-	36	-	-	-	-	-	-	-	-	-	36	-	-	-	-
Janitors, porters, or cleaners	41	12.06	-	41	-	-	-	-	-	-	-	-	-	59	-	-	-	-	-
Truckdrivers	48	13.37	-	-	-	-	-	-	-	13	-	-	2	-	42	23	21	-	-

¹ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

² Less than 0.5 percent.

³ Workers were distributed as follows: 14 percent at \$6.25 and under \$6.50 and 14 percent at \$8.75 and under \$9.

NOTE: Because of rounding, sums of individual items may not equal 100. Overall occupation may include data for subclassifications not shown separately. Dashes indicate that no data were reported.

Table 9. Method of wage payment

(Percent of production workers in shipyards by method of wage payment,¹ United States and selected ports, October 1986)

Method	United States ²	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
All workers	100	100	100	100	100
Time-rated workers	100	100	100	100	100
Formal plans	99	100	97	100	100
Single rate	78	87	56	-	100
Range of rates	21	13	40	100	-
Individual rates	1	-	3	-	-

¹ For definition of method of wage payment, see appendix B.

² Includes data for ports in addition to those shown separately.

NOTE: Because of rounding, sums of individual items may not equal 100. Dashes indicate that no data were reported.

Table 10. Shift differential provisions

(Percent of production workers in shipyards by shift differential provisions,¹ United States and selected ports, October 1986)

Shift differential	United States ²	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Second shift					
Workers in establishments with					
second-shift provisions	92.3	90.5	90.2	100.0	100.0
With shift differential	86.2	90.5	61.7	100.0	100.0
Uniform cents per hour	31.2	15.8	61.7	100.0	22.7
10 cents	3.3	-	-	-	22.7
15 cents .....	.5	-	2.3	-	-
Over 15 and under 20 cents	.2	-	-	-	-
20 cents	19.5	8.9	57.2	43.8	-
Over 20 and under 25 cents	2.4	-	-	56.2	-
25 cents	1.3	2.0	-	-	-
30 cents	2.9	2.9	2.2	-	-
Over 40 cents	1.1	1.9	-	-	-
Uniform percentage	45.1	74.7	-	-	7.6
7 percent	44.1	74.7	-	-	-
10 percent	1.1	-	-	-	7.6
Other formal paid differential ³	9.9	-	-	-	69.7
Third shift					
Workers in establishments with					
third-shift provisions	88.6	86.6	87.6	100.0	100.0
With shift differential	83.1	86.6	61.7	100.0	100.0
Uniform cents per hour	13.0	11.9	2.3	43.8	22.7
15 cents	3.2	-	-	-	22.7
Over 15 and under 20 cents	5.3	8.9	-	-	-
20 cents .....	.9	-	-	18.8	-
Over 20 and under 25 cents	.7	-	2.3	-	-
25 cents	1.1	-	-	24.9	-
30 cents	1.9	2.9	-	-	-
Uniform percentage	45.1	74.7	-	-	7.6
7 percent	44.1	74.7	-	-	-
15 percent	1.1	-	-	-	7.6
Other formal paid differential ³	25.0	-	59.5	56.2	69.7

¹ Refers to policies of shipyards currently operating late shifts or having provisions covering late shifts.

² Includes data for ports in addition to those shown separately.

³ Provisions include a full day's pay for reduced

hours, plus cents-per-hour or percentage additions to the straight-time hourly rate.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported.

Table 11. Shift differential practices

(Percent of production workers in shipyards employed on late shifts by amount of pay differential, United States and selected ports, October 1986)

Shift differential	United States ¹	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Second shift					
Workers employed on second shift	17.1	20.4	12.3	20.5	9.9
Receiving differential	16.0	20.4	7.2	20.5	9.9
Uniform cents per hour	3.6	1.4	7.2	20.5	1.8
10 cents .....	.3	-	-	-	1.8
Over 15 and under 20 cents	(²)	-	-	-	-
20 cents	2.4	1.2	7.2	4.7	-
Over 20 and under 25 cents .....	.7	-	-	15.8	-
30 cents .....	.1	.1	-	-	-
Over 40 cents .....	.1	.2	-	-	-
Uniform percentage	11.4	19.0	-	-	1.1
7 percent	11.2	19.0	-	-	-
10 percent .....	.2	-	-	-	1.1
Other formal paid differential ³	1.0	-	-	-	6.9
Third shift					
Workers employed on third shift	9.7	15.6	.7	4.4	1.2
Receiving differential	9.6	15.6	.3	4.4	1.2
Uniform cents per hour .....	.7	.9	-	1.3	.4
15 cents .....	.1	-	-	-	.4
Over 15 and under 20 cents .....	.6	.9	-	-	-
20 cents	(²)	-	-	.4	-
Over 20 and under 25 cents	(²)	-	-	-	-
25 cents	(²)	-	-	.9	-
Uniform percentage	8.6	14.7	-	-	-
7 percent	8.6	14.7	-	-	-
Other formal paid differential ³ .....	.3	-	.3	3.1	.8

¹ Includes data for ports in addition to those shown separately.² Less than 0.05 percent.³ Provisions include a full day's pay for reduced hours, plus cents-per-hour or percentage additions to

the straight-time hourly rate.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported.

Table 12. Hazard-pay provisions

(Percent of production workers in shipyards by formal premium pay provisions for hazardous work, United States and selected ports, October 1986)

Provision	United States ¹	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Workers in shipyards having hazard pay provisions	66.3	86.6	2.2	81.2	79.4
Additions to base rate:					
Uniform cents per hour	27.5	35.4	-	81.2	22.2
20 and under 25 cents	1.5	-	-	24.9	3.1
30 and under 35 cents	5.3	8.9	-	-	-
40 and under 45 cents	1.7	2.9	-	-	-
50 and under 55 cents	16.6	23.5	-	-	19.0
75 and under 80 cents	2.4	-	-	56.2	-
Uniform percentage	4.3	-	-	-	30.3
100 percent	4.3	-	-	-	30.3
Other formal provision ²	34.5	51.2	2.2	-	27.0

¹ Includes data for ports in addition to those shown separately.² Includes combinations of differentials and a full day's pay for reduced hours.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported.

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Table 13. Hazard-pay practices

(Percent of production workers in shipyards by premium pay received for hazardous work, United States and selected ports, October 1986)

Hazard differential	United States ¹	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Workers receiving hazard pay	9.6	15.9	0.1	1.1	1.2
Additions to base rate:					
Uniform cents per hour	2.2	3.4	-	1.1	1.1
20 and under 25 cents .....	.2	-	-	1.1	1.1
50 and under 55 cents	2.0	3.4	-	-	-
Uniform percentage	(²)	-	-	-	.1
100 percent	(²)	-	-	-	.1
Other formal provision ³	7.4	12.6	.1	-	-

¹ Includes data for ports in addition to those shown separately.² Less than 0.5 percent.³ Includes combinations of differentials and a full day's pay for reduced hours.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported.

Table 14. Sea-trial pay provisions

(Percent of production workers in shipyards by sea-trial pay provisions, United States and selected ports, October 1986)

Provision	United States ¹	Atlantic Coast	Gulf Coast	Pacific Coast
Workers in shipyards having sea-trial pay provisions	61.9	68.5	61.7	58.6
Uniform cents per hour	2.2	2.9	2.3	-
20 and under 25 cents .....	.5	-	2.3	-
50 and under 55 cents	1.7	2.9	-	-
Uniform percentage	3.4	-	-	24.3
50 percent	3.4	-	-	24.3
Other formal pay provisions ²	56.3	65.6	59.5	34.3

¹ Includes data for ports in addition to those shown separately.² Types of formal pay provisions include pay on a 24-hour basis, pay for a guaranteed minimum number of hours, and 50- or 100-percent premiums, in lieu of other forms of premium pay.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported.

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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, October 1986)

Number of paid holidays	United States ¹	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
All workers	100	100	100	100	100
Workers in establishments providing paid holidays	100	100	99	100	100
Under 7 days	2	2	3	-	-
7 days	4	-	4	-	19
8 days	12	10	31	-	-
9 days	2	2	2	-	-
10 days	6	-	-	19	34
11 days	43	63	-	56	23
12 days	17	-	57	25	24
13 days	14	24	2	-	-

¹ Includes data for ports in addition to those shown separately.

NOTE: Because of rounding, sums of individual items may not equal 100. Dashes indicate that no data were reported.

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, October 1986)

Vacation policy	United States ¹	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
All production workers	100	100	100	100	100
Method of payment					
Workers in establishments providing paid vacations	100	100	99	100	100
Length-of-time payment	58	49	99	100	24
Percentage payment	42	51	-	-	76
Amount of vacation pay²					
After 1 year of service:					
1 week	89	100	90	100	43
Over 1 and under 2 weeks	8	-	-	-	57
2 weeks	2	-	7	-	-
Over 2 weeks	(³)	-	2	-	-
After 2 years of service:					
1 week	64	66	90	75	19
Over 1 and under 2 weeks	5	-	-	-	34
2 weeks	30	34	7	25	47
Over 2 weeks	(³)	-	2	-	-
After 3 years of service:					
1 week	22	2	88	56	-
Over 1 and under 2 weeks	30	51	-	-	-
2 weeks	42	44	9	44	77
Over 2 and under 3 weeks	4	-	2	-	23
3 weeks	2	3	-	-	-
After 5 years of service:					
Under 2 weeks	1	2	-	-	-
2 weeks	73	72	95	75	43
Over 2 and under 3 weeks	23	24	2	25	57
Over 3 weeks	2	3	3	-	-
After 8 years of service:					
2 weeks	68	72	95	56	19
Over 2 and under 3 weeks	20	24	2	19	34
3 weeks	10	2	3	25	47
4 weeks	2	3	-	-	-
After 10 years of service:					
2 weeks	4	5	4	-	-
Over 2 and under 3 weeks	47	51	57	-	34
3 weeks	44	40	38	100	43
Over 3 weeks	5	3	-	-	23

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, October 1986)

Vacation policy	United States ¹	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Amount of vacation pay²—Continued					
After 12 years of service:					
2 weeks	2	2	4	-	-
Over 2 and under 3 weeks	37	55	-	-	34
3 weeks	51	40	95	75	19
Over 3 and under 4 weeks	4	-	-	25	23
4 weeks	5	3	-	-	24
After 15 years of service:					
Under 3 weeks	3	2	4	-	4
3 weeks	54	72	36	-	19
Over 3 and under 4 weeks	20	24	-	44	30
4 weeks	20	3	59	56	24
Over 4 weeks	3	-	-	-	23
After 20 years of service:					
Under 3 weeks	2	2	4	-	-
3 weeks	14	11	33	-	-
Over 3 and under 4 weeks	5	-	-	-	34
4 weeks	76	87	62	100	43
Over 4 weeks	3	-	-	-	23
After 25 years of service:					
Under 3 weeks	2	2	4	-	-
3 weeks	14	11	33	-	-
Over 3 and under 4 weeks	5	-	-	-	34
4 weeks	41	35	62	-	43
Over 4 and under 5 weeks	3	-	-	-	23
5 weeks	34	51	-	75	-
Over 5 weeks	1	-	-	25	-
After 30 years of service:					
Under 3 weeks	2	2	4	-	-
3 weeks	14	11	33	-	-
Over 3 and under 4 weeks	5	-	-	-	34
4 weeks	27	12	62	-	43
Over 4 and under 5 weeks	3	-	-	-	23
5 weeks	48	75	-	75	-
Over 5 weeks	1	-	-	25	-

¹ Includes data for ports in addition to those shown separately.

² 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 indicated at

20 years may include changes that occurred between 15 and 20 years.

³ Less than 0.5 percent.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported.

Table 17. Health, insurance, and retirement plans

(Percent of production workers in shipyards with specified health, insurance, and retirement plans,¹ United States and selected ports, October 1986)

Type of plan	United States ²	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
All production workers	100	100	100	100	100
Workers in establishments providing:					
Life insurance	100	100	100	100	100
Noncontributory plans	60	45	67	100	100
Accidental death and dismemberment insurance	81	76	93	100	77
Noncontributory plans	41	21	62	100	77
Sickness and accident insurance or sick leave or both ³	74	86	64	100	28
Sickness and accident insurance	74	86	64	100	28
Noncontributory plans	28	32	3	81	28
Sick leave (full pay, no waiting period)	44	75	-	-	-
Long-term disability insurance	9	-	31	25	8
Noncontributory plans	2	-	-	25	8
Hospitalization insurance	100	100	100	100	100
Noncontributory plans	43	45	2	25	100
Surgical insurance	100	100	100	100	100
Noncontributory plans	43	45	2	25	100
Medical insurance	100	100	100	100	100
Noncontributory plans	43	45	2	25	100
Major medical insurance	100	100	100	100	100
Noncontributory plans	43	45	2	25	100
Dental insurance	54	65	1	25	100
Noncontributory plans	22	12	-	25	100
Vision care insurance	9	-	-	-	67
Noncontributory plans	9	-	-	-	67
Prescription drugs insurance	53	53	31	81	77
Noncontributory plans	43	51	1	25	77
Retirement plans ⁴	90	100	66	44	100
Pensions	88	97	66	44	100
Noncontributory plans	76	97	9	44	100
Severance pay	2	3	-	-	-
Noncontributory plans	2	3	-	-	-

¹ Includes those 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 over legal requirements. "Noncontributory plans" include only those plans financed entirely by the employer.

² Includes data for ports in addition to those shown separately.

³ Unduplicated total of workers receiving sickness and accident insurance and sick leave shown separately.

⁴ Unduplicated total of workers covered by pension plans and severance pay shown separately.

NOTE: Dashes indicate that no data were reported.

Table 18. Other selected benefits

(Percent of production workers in shipyards with formal provisions for selected benefits,¹ United States and selected ports, October 1986)

Item	United States ²	Atlantic Coast	Gulf Coast	Great Lakes	Pacific Coast
Workers in shipyards with provisions for:					
Cost-of-living adjustments ³	18	24	2	19	20
Funeral leave	69	93	5	100	63
Jury-duty leave	91	86	97	100	100
Call-in or callback pay	85	94	62	100	81
Daily reporting pay	78	92	62	100	39

¹ For definition of items, see appendix B.

² Includes data for ports in addition to those shown separately.

³ Adjustments based on the BLS Consumer Price

Index.

NOTE: Dashes indicate that no data were reported.

Appendix A. U.S. Navy Shipyards

Survey data in this bulletin relate to private shipyards. The U.S. Navy employed 62,488 civilians in October 1986 in seven shipyards in the coterminous United States. The three yards on the Pacific Coast, and the number of workers they employed, were Puget Sound, 11,154; Mare Island (San Francisco), 9,417; and Long Beach, 5,444. Norfolk and Charleston on the southern Atlantic Coast had 12,132 and 8,161, respectively; and the northern Atlantic yards (Philadelphia and Portsmouth) employed 8,682 and 7,498, respectively. In addition, the Navy facility at Pearl

Harbor in Hawaii employed 6,048. Most of the work in Navy yards is repairing and major converting of vessels; new ships are constructed in private yards under contract.

Pay rates for civilian trade, maintenance, and service workers (blue collar) in Navy shipyards (as well as in other U.S. Government agencies) are set in accordance with provisions of the Federal Wage System (5 U.S.C. 5341-5347). This system provides for common job grading standards and pay policies among U.S. Government agencies. It also provides for pay rates to be adjusted annually in line with prevailing rates

Table A-1. BLS survey job title and corresponding occupational title and wage grade of workers in U.S. Navy shipyards, October 1986

BLS job title	Wage grade	U.S. Navy occupational title
Production		
Electronics technician II	11	Electronics mechanic
Electronics technician III	12	Electronics mechanic
Inspector, class B	9	Inspector
Insulator	10	Insulator
Loft worker	14	Lofter
Machine-tool operator, production, class A	9	Machine-tool operator
Machine-tool operator, production, class B	9	Machine-tool operator
Machine-tool operator, production, class C	8	Machine-tool operator
Machinists, production	10	Machinist
Marine electrician	10	Electrician
Marine machinist	10	Marine machinery mechanic
Marine pipefitter	10	Pipefitter
Marine rigger	10	Rigger
Marine trades helper	5	Trades helpers
Painter	7	Painting worker
Sheet-metal worker	10	Sheet-metal mechanic
Shipfitter	10	Shipfitter
Shipwright	10	Shipwright
Welder, hand, class A	10	Welder
Welder, hand, class B	8	Welding worker
Welder, machine (arc or gas)	8 or 10	Welding worker and welder
Maintenance		
Carpenter, maintenance	9	Carpenter
Electrician, maintenance	10	Electrician
Mechanic, maintenance	10	Production machinery mechanic
Pipefitter, maintenance	10	Pipefitter
Welder, maintenance	10	Welder
Material movement and service		
Crane operator, electric bridge (traveling)	7 or 9	Crane operator
Crane operator, gantry crane	9 or 11	Crane operator
Guard I	General	Guard
Guard II	schedule	Guard
	position	
Janitor	1 or 2	Custodial worker
Power-truck operator, forklift	5	Forklift operator
Truckdriver	6	Motor vehicle operator

among private employers in each geographic area. Each grade has five longevity pay steps, each equal to about 4 percent of the grade's base rate.

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

In addition to straight-time pay rates in table A-2, civilian workers at U.S. Navy yards also receive the same sup-

plementary benefits as those provided to General Schedule (white collar) workers.¹ Navy shipyard workers also may receive hazard pay, shift differentials, and premium pay for overtime, holiday, and Sunday work.

¹ 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 (Bureau of Labor Statistics, 1975), and its supplement covering 1975-78 (1980).

Table A-2. Federal Wage System hourly wage rates¹ for nonsupervisory workers in U.S. Navy shipyards, October 1986

Wage grade and step	North Atlantic		South Atlantic		Pacific		
	Philadelphia	Portsmouth	Charleston	Norfolk	Long Beach	Puget Sound	Mare Island
WG-1 Step 1	7.40	5.76	5.87	5.43	6.64	8.36	7.96
WG-1 Step 5	8.63	6.74	6.86	6.34	7.75	9.74	9.30
WG-2 Step 1	7.71	6.19	6.46	5.99	7.31	8.71	8.45
WG-2 Step 5	8.99	7.21	7.53	6.99	8.52	10.16	9.86
WG-3 Step 1	8.02	6.60	7.02	6.54	7.96	9.03	8.92
WG-3 Step 5	9.37	7.69	8.19	7.63	9.28	10.53	10.41
WG-4 Step 1	8.35	7.00	7.59	6.94	8.62	9.37	9.41
WG-4 Step 5	9.73	8.17	8.84	8.12	10.06	10.93	10.97
WG-5 Step 1	8.65	7.44	8.16	7.36	9.15	9.70	9.90
WG-5 Step 5	10.10	8.68	9.53	8.59	10.69	11.34	11.57
WG-6 Step 1	8.99	7.91	8.72	7.76	9.56	10.04	10.39
WG-6 Step 5	10.50	9.23	10.17	9.07	11.14	11.72	12.13
WG-7 Step 1	9.31	8.39	9.29	8.19	9.93	10.37	10.86
WG-7 Step 5	10.85	9.80	10.83	9.56	11.60	12.10	12.68
WG-8 Step 1	9.61	8.85	9.85	8.59	10.32	10.72	11.35
WG-8 Step 5	11.21	10.36	11.49	10.03	12.05	12.51	13.24
WG-9 Step 1	9.93	9.36	10.41	9.00	10.71	11.06	11.84
WG-9 Step 5	11.60	10.92	12.15	10.51	12.50	12.89	13.80
WG-10 Step 1	10.26	9.85	11.00	9.41	11.09	11.38	12.31
WG-10 Step 5	11.98	11.49	12.82	10.97	12.93	13.29	14.36
WG-11 Step 1	10.58	10.32	11.55	9.84	11.48	11.72	12.79
WG-11 Step 5	12.35	12.05	13.48	11.48	13.39	13.68	14.94
WG-12 Step 1	10.88	10.80	12.11	10.26	11.87	12.04	13.29
WG-12 Step 5	12.72	12.59	14.12	11.96	13.84	14.06	15.51
WG-13 Step 1	11.21	11.20	12.67	10.65	12.26	12.39	13.78
WG-13 Step 5	13.09	13.08	14.77	12.43	14.32	14.45	16.07

¹ 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 both steps 3 and 4. Each step is separated by 4-percent increments.

Appendix B. Scope and Method of Survey

Scope of survey

The survey included establishments engaged primarily in building and repairing all types of ships, barges, and lighters, whether propelled by sail or motor power or towed by other craft (industry 3731 as defined in the 1972 edition of the *Standard Industrial Classification Manual* prepared by the U.S. Office of Management and Budget). Excluded from the survey were (1) separate auxiliary units such as central offices and warehouses; (2) establishments fabricating structural assemblies or 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 100 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 representatives to a probability-based 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. In combining the data, each establishment was given an appropriate weight. 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 industrial operations are performed. An establishment is not necessarily identical with a company, which may consist of one establishment or more. The terms "establishment" and "shipyard" are used interchangeably in this bulletin.

Employment

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

position 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 pay increases (but not bonuses) were included as part of the workers' regular pay. Excluded are performance bonuses and lump-sum payments of the type negotiated in the auto and aerospace industries, as well as profit-sharing arrangements, attendance bonuses, Christmas, or yearend bonuses, and other nonproduction bonuses.

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

Table B-1. Estimated number of establishments and employees within scope of study and number studied, shipbuilding and repairing industry, October 1986

Location	Number of establishments ¹		Workers in establishments		
	Within scope of study	Actually studied	Within scope of study		Actually studied ²
			Total ³	Production workers	
United States ⁴	81	34	100,273	65,309	62,089
Atlantic Coast	28	9	61,853	38,531	28,818
Gulf Coast	24	9	21,385	13,959	19,711
Great Lakes	3	3	3,541	2,791	3,541
Pacific Coast	21	8	12,510	9,241	9,035

¹ Includes only establishments with 100 workers or more at the time of reference of the universe data.

² Data relate to total employment in shipyards actually studied.

³ Includes executive, professional, office, and other

workers in addition to the production worker category shown separately.

⁴ Includes data for port locations in addition to those shown separately. Alaska and Hawaii were not included in the study.

dividing by the number of individuals. The hourly earnings of salaried workers were obtained by dividing straight-time salary by normal (or standard) hours to which the salary corresponds.

The *median* designates position; that is, one-half of the employees surveyed received the same as or more than this rate and one-half received the same as or less. The *middle range* is defined by two rates of pay such that one-fourth of the employees earned the same or less than the lower of these rates and one-fourth earned the same or more than the higher rate.

Labor-management agreements

Separate wage data are presented, where possible, for establishments that had (1) a majority of the production workers covered by labor-management contracts, and (2) none or a minority of the production workers covered by labor-management contracts.

Method of wage payment

Tabulations by method of wage payment relate to the number of workers paid under the various time-rated 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 speci-

fied. Specific rates of individual workers within the range may be determined by merit, length of service, or a combination of these.

Scheduled weekly hours

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

Shift provisions and practices

Shift provisions relate to the policies of establishments either currently operating late shifts or having formal provisions covering late-shift work. Practices relate to workers employed on late shifts at the time of the survey.

Hazard and sea-trial pay

Hazard pay is a premium payment for hours worked under unpleasant or dangerous conditions. Examples include working in uncleaned oil tanks, dismantling unusually dirty diesel engines, or blowing ground cork into refrigerating compartments. Sea-trial pay consists of special payments for work performed aboard a ship after the ship leaves the yard for a trial run at sea.

Establishment practices and employee benefits

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 where-by 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 8 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.¹ Among plans included are those underwritten by a commercial insurance company and those paid directly by the employer from 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.

Tabulations of paid sick leave plans are limited to formal plans² 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.

¹ Temporary disability insurance which provides benefits to covered workers disabled by injury or illness which is not work-connected is mandatory under State laws in California, New Jersey, New York, and Rhode Island. Establishment plans which meet only the legal requirements are excluded from these data, but those under which (1) employers contribute more than is legally required, or (2) benefits exceed those specified in the State law are included. In Rhode Island, benefits are paid out of a State fund to which only employees contribute. In each of the other three States, benefits are paid either from a State fund or through a private plan.

State fund financing: In California, only employees contribute to the State fund; in New Jersey, employees and employers contribute; in New York, employees contribute up to a specified maximum and employers pay the difference between the employees' share and the total contribution required.

Private plan financing: In California and New Jersey, employees cannot be required to contribute more than they would if they were covered by the State fund; in New York, employees can agree to contribute more if the State rules that the additional contribution is commensurate with the benefit provided.

² An establishment is considered as having a formal plan if it specifies at least the minimum number of days of sick leave available to each employee. Such a plan need not be written, but informal sick leave allowances determined on an individual basis are excluded.

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 non-profit organization, or they may be a form of self-insurance.

Major medical insurance includes plans designed to cover employees for services which go beyond those covered under hospitalization, medical, and surgical insurance. Major medical plans typically have deductibles and require copayments, and frequently have maximum benefits. Comprehensive plans, which cover all expenses with neither deductibles nor copayments, are not considered as including major medical insurance.

Dental insurance, for purposes of this survey, covers routine dental work such as fillings, extractions, and X-rays. Excluded are plans which cover only oral surgery or accidental injury.

Vision care insurance, for purposes of this survey, covers eye examinations and eyeglasses. Excluded are plans which cover only certain kinds of surgery or care required as a result of an accident.

Prescription drug insurance plans provided full or partial payment for drugs prescribed by a physician. Excluded are plans which provide payment only after a considerable deductible has been met, or as a result of extended medical care.

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.

Cost-of-living adjustments. Data relate to formal plans for adjustments to wages in keeping with changes in the BLS Consumer Price Index or some other measure.

*Paid funeral and jury-duty leave.*³ Data for paid funeral and

³ When paid jury-duty leave is required by law, as it is in Alabama, Nebraska, Tennessee, and parts of Massachusetts, plans are included only if the employer provides the employees with benefits exceeding the legal requirement.

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.

Call-in or callback pay. Data relate to plans which guarantee an amount to an employee recalled to work after com-

pleting a regular work shift.

Daily reporting pay. Data relate to formal plans which guarantee a daily minimum wage to an employee who reports to work as scheduled but finds no work available or less work than can be done in a guaranteed period (e.g., 4 hours).

Appendix C. Occupational Descriptions

The primary purpose of preparing job descriptions for the Bureau's wage surveys is to assist its field representatives 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 interestablishment 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 representatives are instructed to exclude working supervisors, apprentices, learners, beginners, trainees, and part-time, temporary, and probationary workers.

The titles and 3- or 4-digit codes below the survey job titles in this appendix are taken from the 1980 edition of the *Standard Occupational Classification Manual (SOC)*, issued by the U.S. Department of Commerce, Office of Federal Statistical Policy and Standards.

In general, the Bureau of Labor Statistics occupational descriptions are much more specific than those found in the SOC manual. For example, one SOC group—Welder and cutter(7714)—includes hand welder and maintenance welder, two of the jobs used in this survey of shipbuilding and repairing. Therefore, in comparing the results of this survey with other sources, differences in occupational definitions should be taken into consideration.

Production

Electronics technician

(3711: Electrical and electronics engineering technologists and technicians)

Works on various types of electronic equipment and related devices by performing one or a combination of the following: Installing, maintaining, repairing, 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:

Electronics technician I

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.

Electronics technician II

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 level III technician.

Receives technical guidance, as required, from supervi-

sor or higher level technician, and work is reviewed for specific compliance with accepted practices and work assignments. May provide technical guidance to lower level technicians.

Electronics technician III

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.

Electronics technician not classifiable by level

Electronics technicians in positions with work characteristics as described, and within the range of the defined levels, should be reported under this classification when the information needed to classify them according to the level definitions is not available.

Inspector

(6881: Precision inspector, tester, and grader)

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; and 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 assigned, limited to familiar products and process-

es 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 inspections operations, including decisions regarding proper fit or performance of some parts; and 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; and visual examination of parts or products, rejecting units having obvious deformities or flaws.

Insulator

(Pipe coverer)
(6465: Insulation worker)

Covers boilers, pipes, tanks, and refrigeration units with insulating materials such as asbestos, cork, plastic, and magnesia to reduce loss or absorption of heat, prevent moisture condensation, and deaden sound. Work involves *most of the following*: Wiring prefabricated covering around pipes using handtools; fitting insulation around boilers, evaporators, and turbines; and cementing cloth over insulating material to provide smooth finish. May measure, cut, and sew insulating materials and cloth for valves and other fittings. *Excludes* pipefitters and pipefitters' helpers who install pipes as well as cover them.

Loft worker

(Loftsman)
(6831: Patternmaker and model maker, wood)

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 table of offsets; comparing prepared tables with tables of blueprints; constructing template, using knowledge of geometric construction, and tools; marking templates with indentifying 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

(7329: Miscellaneous metalworking and plastic working machine setup operator)

Operates or tends one or more nonportable, power-driven machine tools (including numerically controlled machine tools) in order to shape metal by progressively removing por-

tions 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**
Milling machines
Planers
Screw machines, automatic
Screw machines, hand
Shapers
Turret lathes, automatic

*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.

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-around machinist, custom machinist)
(6813: 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 machinings; knowledge of the working properties of the common metals; selecting standard materials, parts, and equipment needed for his work; and 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

(6432: 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 connecting 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)
(6178: Millwright)

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

(645: Plumber, pipefitter, and steamfitter)

Lays out, installs, and maintains a ship's 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 bends pipe to specified shape on pipe-bending fixture; bolting or welding pipe brackets to support pipe systems; connecting pipes to fixtures, such as radiators, 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)

(6177: 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, chain-falls, 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.

Marine trades helper

(8619: Helper; precision production occupation and setup operator)

Assists one or more workers in the skilled production trades on ship, by performing specific or general duties of lesser skill, such as keeping a worker supplied with materials and tools; cleaning work area, machine, and equipment; assisting journeyman by holding materials or tools; and performing other 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 work areas; and in others, is permitted to perform specialized machine operations, or parts of a trade that are also performed by workers on a full-time basis. *Excluded* from this category are helpers who primarily assist maintenance workers.

Painter

(6442: Painter, construction and maintenance)

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 match-

ing of colors, and the finishes are either standard in character or prepared by others.

Sheet-metal worker

(6824: 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

(6821: Layout worker)

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)

(6422: 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 alignment 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; aligning 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. 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

(7714: Welder and cutter)

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 aboard ships. In addition to performing hand welding or brazing operations, 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; and 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)

(7332: Welding machine setup 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; and 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.

Maintenance

Carpenter, maintenance

(6422: Carpenter)

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 instructions; using a variety of carpenter's handtools, portable power tools, and standard measuring instruments; making standard shop computations relating to dimensions of work; and 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.

Electrician, maintenance

(6432: Electrician)

Performs a variety of electrical trade functions such as the installation, maintenance, or repair of equipment for the generation, 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, switchboards, controllers, circuit breakers, motors, heating units, conduit systems, or other transmission equipment; working from blueprints, drawings, layouts, 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; and 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.

Mechanic (machinery), maintenance

(6178: Millwright)

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 scraping 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 the machine to a machine shop for major repairs; preparing written specifications for major repairs or for the production of parts ordered from machine shops; reassembling machines; and making all necessary adjustments for operation. In general,

the work of a machinery maintenance mechanic requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience. *Excluded* from this classification are workers whose primary duties involve setting up or adjusting machines.

Pipefitter, maintenance

(645: Plumber, pipefitter, and steamfitter)

Installs or repairs water, steam, gas, or other types of pipe and pipefittings in an establishment. Work involves *most of the following*: Laying out 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 size of pipe required; and 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*.

Welder, maintenance

(7714: Welder and cutter)

Fuses (welds) 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

(8315: Crane and tower 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

(5144: Guard and police, except public service)

Protects property from theft or damage, or persons from hazards or interference. Duties involve serving at a fixed post, making rounds on foot or by motor vehicle, or escorting persons or property. May be deputized to make arrests. May also help visitors and customers by answering questions and giving directions. Guards employed by establishments which provide protective services on a contract basis are included in this occupation.

For wage study purposes, guards are classified as follows:

Guard I

Carries out instructions primarily oriented toward insuring that emergencies and security violations are readily discovered and reported to appropriate authority. Intervenes directly only in situations which require minimal action to safeguard property or persons. Duties require minimal training. Commonly, the guard is not required to demonstrate physical fitness. May be armed, but generally is not required to demonstrate proficiency in the use of firearms or special weapons.

Guard II

Enforces regulations designed to prevent breaches of security. Exercises judgment and uses discretion in dealing with emergencies and security violations encountered. Determines whether first response should be to intervene directly (asking for assistance when deemed necessary and time allows), to keep situation under surveillance, or to report situation so that it can be handled by appropriate authority. Duties require specialized training in methods and techniques of protecting security areas.

Commonly, the guard is required to demonstrate continuing physical fitness and proficiency with firearms or other special weapons.

Guards, not classifiable by level

Workers in positions with work characteristics as described, and within the range of defined levels, should be reported under this classification when the information needed to classify them according to the level definitions is not available.

Janitor, porter, or cleaner

(5244: Janitor and cleaner)

Cleans and keeps in an orderly condition factory working areas and washrooms, or premises of an office, apartment house, or commercial 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; and cleaning lavatories, showers, and

restrooms. Workers who specialize in window washing are *excluded*.

Power-truck operator

(8318: Industrial truck and tractor equipment 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 powertruck, as follows:

Forklift operator

Power-truck operator (other than forklift)

Truckdriver

(8213: Truckdriver, heavy)

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 establish-

ments, or between retail establishments and customers' houses or places of business. May also load or unload truck with or without helpers, make minor mechanical repairs, and keep truck in good working order. Salesroute and over-the-road drivers are *excluded*.

For wage study purposes, truckdrivers are classified by type and rated capacity of truck, as follows:

Truckdriver, light truck

(straight truck, under 1 1/2 tons, usually 4 wheels)

Truckdriver, medium truck

(straight truck, 1 1/2 to 4 tons inclusive, usually 6 wheels)

Truckdriver, heavy truck

(straight truck, over 4 tons, usually 10 wheels)

Truckdriver, tractor-trailer

Truckdrivers not classifiable by category

Truckdrivers in positions with work characteristics as described should be reported under this category when the information needed to classify them according to category is not available or they are not assigned to a particular category of truck.

Industry Wage Survey Bulletins

The most recent reports providing occupational wage data for industries currently included in the Bureau's program of industry wage surveys are listed below. Bulletins still in print are for sale from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or from the Bureau of Labor Statistics, Publications Sales Center, P.O. Box 2145, Chicago, Ill. 60690. Order by title and GPO Stock Number. Bulletins marked with an asterisk (*) are available only from the Chicago address. Bulletins that are out of print are available for reference at leading public, college, or university libraries or at the Bureau's Washington or regional offices.

Manufacturing

Basic Iron and Steel, 1983. BLS Bulletin 2221. \$2.25*
Cigarette Manufacturing, 1986. BLS Bulletin 2276. \$1.25
GPO Stock No. 029-001-02928-4
Corrugated and Solid Fiber Boxes, 1981. BLS Bulletin 2138.
Out of print.
Grain Mill Products, 1982. BLS Bulletin 2207. \$3*
Hosiery Manufacturing, 1981. BLS Bulletin 2151. Out of print.
Industrial Chemicals, 1986. BLS Bulletin 2287. \$2.25
GPO Stock No. 029-001-02934-9
Iron and Steel Foundries, 1986. BLS Bulletin 2291.
Machinery Manufacturing, 1983. BLS Bulletin 2229. \$3.50*
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Men's and Boys' Shirts and Nightwear, 1984.
BLS Bulletin 2232. \$2.50*
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BLS Bulletin 2230. \$2.25*
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Out of print.
Motor Vehicles and Parts, 1983. BLS Bulletin 2223. \$4.75*
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BLS Bulletin 2286. \$3. GPO Stock No. 029-001-02935-7

Pulp, Paper, and Paperboard Mills, 1982.
BLS Bulletin 2180. Out of print.
Shipbuilding and Repairing, 1986. BLS Bulletin 2295.
Structural Clay Products, 1986. BLS Bulletin 2288. \$3.25
GPO Stock No. 029-001-02933-1
Synthetic Fibers, 1985. BLS Bulletin 2268. \$1.50
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GPO Stock No. 029-001-02931-4

Nonmanufacturing

Appliance Repair Shops, 1981. BLS Bulletin 2177. \$1*
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Banking, 1985. BLS Bulletin 2269. \$4
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Bituminous Coal Mining, 1982. BLS Bulletin 2185. Out of print.
Certificated Air Carriers, 1984. BLS Bulletin 2241. \$2*
Computer and Data Processing Services, 1982.
BLS Bulletin 2184. \$2*
Contract Cleaning Services, 1981. BLS Bulletin 2152. Out of print.
Department Stores, 1981. BLS Bulletin 2147. Out of print.
Electric and Gas Utilities, 1982. BLS Bulletin 2218. \$4.75*
Hospitals, 1985. BLS Bulletin 2273. \$12
GPO Stock No. 029-001-02919-5
Hotels and Motels, 1983. BLS Bulletin 2227. \$3.25*
Life and Health Insurance Carriers, 1986. BLS Bulletin 2293.
Metal Mining, 1977. BLS Bulletin 2017. Out of print.
Nursing and Personal Care Facilities, 1985.
BLS Bulletin 2275. \$5
GPO Stock No. 029-001-02921-7
Oil and Gas Extraction, 1982. BLS Bulletin 2193. \$3*

Employee Benefits in Medium and Large Firms, 1986

U.S. Department of Labor
Bureau of Labor Statistics
Bulletin 2281

The Bureau of Labor Statistics issues its 1986 bulletin on employee benefits in medium and large firms. This survey is the eighth in the series.

Data available

- Incidence and detailed characteristics of 14 private sector employee benefits paid for at least in part by the employer: Lunch and rest periods; holidays, vacations, and personal, funeral, jury-duty, military, and sick leave; sickness and accident, long-term disability, health, and life insurance; and private retirement/capital accumulation plans. Included in the retirement data is information on defined benefit plans, such as benefit formulas and pension replacement rates, and on defined contribution plans, such as salary reduction or 401 (k) plans.
- Incidence and provisions of flexible benefits plans and reimbursement accounts are included for the first time in 1986.

Coverage

- Major benefits in medium and large firms, nationwide.
- Minimum employment in establishments covered is generally 100 or 250 employees, depending on the industry.

Employee Benefits in Medium and Large Firms, 1986



U.S. Department of Labor
Bureau of Labor Statistics
June 1987

Bulletin 2281



Source of data

- Sample of about 1,500 establishments in a cross-section of the Nation's private industries; primarily by personal interview.

Uses

- Union contract negotiations.
- Conciliation and arbitration in public and private sectors.
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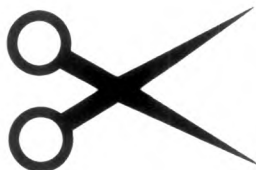
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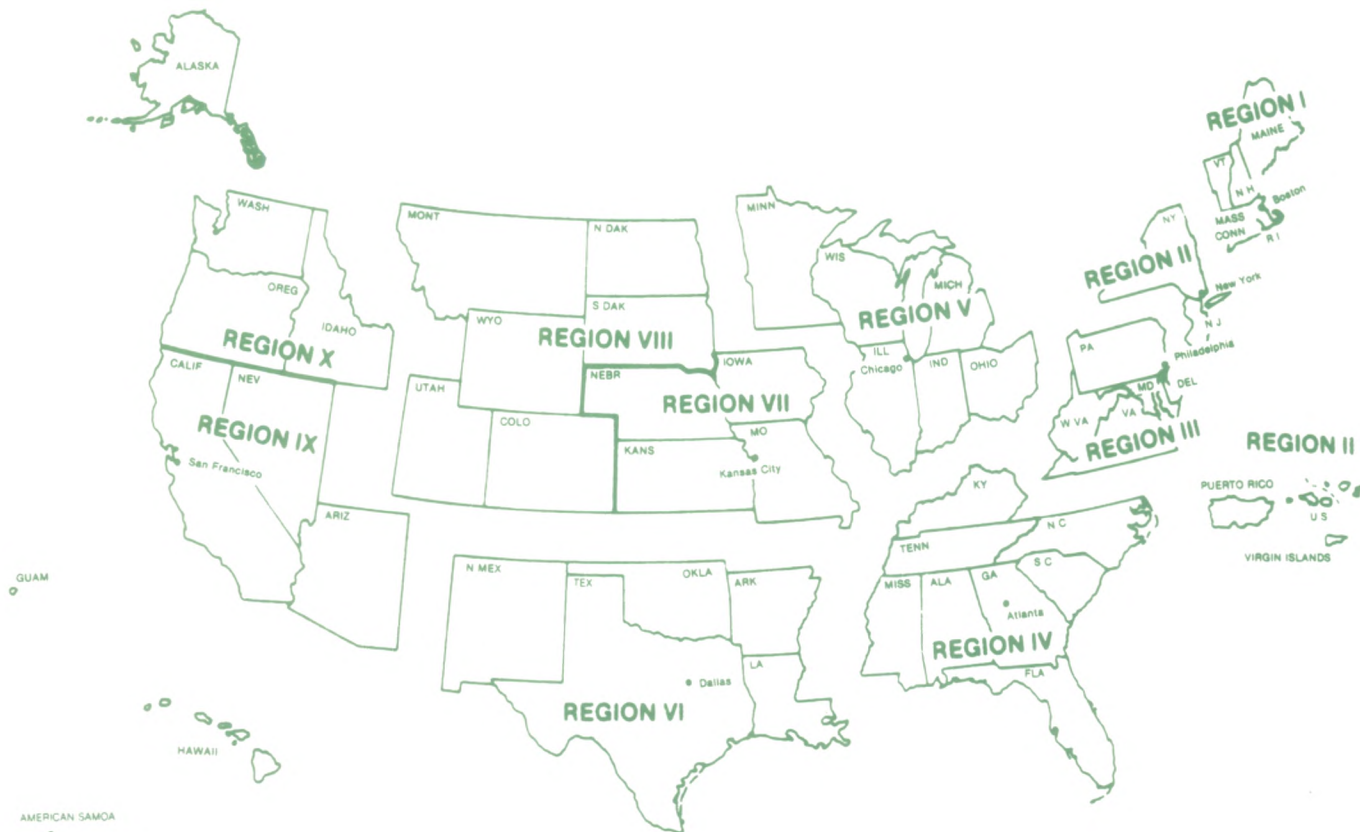
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