

Case 4-31 (90 minutes)

1. Step-down method:

| | <i>Cafeteria</i> | <i>Custodial Services</i> | <i>Machinery Maintenance</i> | <i>Milling</i> | <i>Finishing</i> |
|---|------------------|-------------------------------|----------------------------------|------------------|------------------|
| Total costs before allocations | \$320,000 | \$65,400 | \$ 93,600 | \$416,000 | \$166,000 |
| Allocations: | | | | | |
| Cafeteria (40/500; 60/500; 100/500; 300/500) ¹ | (320,000) | 25,600 | 38,400 | 64,000 | 192,000 |
| Custodial Services (10,000/70,000; 40,000/70,000; 20,000/70,000) ² | | (91,000) | 13,000 | 52,000 | 26,000 |
| Machinery Maintenance (160,000/200,000; 40,000/200,000) ³ | | | (145,000) | 116,000 | 29,000 |
| Total overhead after allocations | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$648,000</u> | <u>\$413,000</u> |

¹ Based on 40 + 60 + 100 + 300 = 500 employees.

² Based on 10,000 + 40,000 + 20,000 = 70,000 square feet.

³ Based on 160,000 + 40,000 = 200,000 machine-hours.

$$\text{Milling predetermined overhead rate} = \frac{\$648,000}{160,000 \text{ machine-hours}} = \$4.05 \text{ per machine-hour}$$

$$\text{Finishing predetermined overhead rate} = \frac{\$413,000}{70,000 \text{ direct labor-hours}} = \$5.90 \text{ per direct labor-hour}$$

Case 4-31 (continued)

2. Direct method:

| | <i>Cafeteria</i> | <i>Custodial Services</i> | <i>Machinery Maintenance</i> | <i>Milling</i> | <i>Finishing</i> |
|---|------------------|-------------------------------|----------------------------------|----------------|------------------|
| Total costs before allocations | \$320,000 | \$65,400 | \$93,600 | \$416,000 | \$166,000 |
| Allocations: | | | | | |
| Cafeteria (100/400; 300/400) ¹ | (320,000) | | | 80,000 | 240,000 |
| Custodial Services (40,000/60,000; 20,000/60,000) ² | | (65,400) | | 43,600 | 21,800 |
| Machinery Maintenance (160,000/200,000; 40,000/200,000) ³ | | | (93,600) | 74,880 | 18,720 |
| Total overhead after allocations | <u>\$ 0</u> | <u>\$ 0</u> | <u>\$ 0</u> | \$614,480 | \$446,520 |
| Divide by machine-hours | | | | ÷160,000 | |
| Divide by direct labor-hours | | | | | ÷70,000 |
| Predetermined overhead rate | | | | <u>\$ 3.84</u> | <u>\$ 6.38</u> |

¹ Based on 100 + 300 = 400 employees.

² Based on 40,000 + 20,000 = 60,000 square feet.

³ Based on 160,000 + 40,000 = 200,000 machine-hours.

$$\text{Milling predetermined overhead rate} = \frac{\$614,480}{160,000 \text{ machine-hours}} = \$3.84 \text{ per machine-hour}$$

$$\text{Finishing predetermined overhead rate} = \frac{\$446,520}{70,000 \text{ direct labor-hours}} = \$6.38 \text{ per direct labor-hour}$$