**Chapter 25: Standard Costs and Balanced Scorecard**

**DO IT! 1 Standard Costs**

Ridette Inc. accumulated the following standard cost data concerning product Cty31.

- Direct materials per unit: 1.5 pounds at $4 per pound
- Direct labor per unit: 0.25 hours at $13 per hour.
- Manufacturing overhead: allocated based on direct labor hours at a predetermined rate of $15.60 per direct labor hour.

Compute the standard cost of one unit of product Cty31.

**Solution**

<table>
<thead>
<tr>
<th>Manufacturing Cost Element</th>
<th>Standard Quantity</th>
<th>Standard Price</th>
<th>Standard Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>1.5 pounds</td>
<td>$4.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Direct labor</td>
<td>0.25 hours</td>
<td>$13.00</td>
<td>$3.25</td>
</tr>
<tr>
<td>Manufacturing overhead</td>
<td>0.25 hours</td>
<td>$15.60</td>
<td>$3.90</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>$13.15</td>
</tr>
</tbody>
</table>


**DO IT! 2 Direct Materials Variances**

The standard cost of Wonder Walkers includes two units of direct materials at $8.00 per unit. During July, the company buys 22,000 units of direct materials at $7.50 and uses those materials to produce 10,000 Wonder Walkers. Compute the total, price, and quantity variances for materials.

**Solution**

- Standard quantity = 10,000 x 2
- Total materials variance = (22,000 x $7.50) – (20,000 x $8.00) = $5,000 unfavorable
- Materials price variance = (22,000 x $7.50) – (22,000 x $8.00) = $11,000 favorable
- Materials quantity variance = (22,000 x $8.00) – (20,000 x $8.00) = $16,000 unfavorable

The standard cost of Product YY includes 3 hours of direct labor at $12.00 per hour. The predetermined overhead rate is $20.00 per direct labor hour. During July, the company incurred 3,500 hours of direct labor at an average rate of $12.40 per hour and $71,300 of manufacturing overhead costs. It produced 1,200 units.

(a) Compute the total, price, and quantity variances for labor. (b) Compute the total overhead variance.

**Solution**

Substituting amounts into the formulas, the variances are:

- **Total labor variance**
  \[ (3,500 \times 3 \times 12.40) - (3,600 \times 3 \times 12.00) = 200 \text{ unfavorable} \]
- **Labor price variance**
  \[ (3,500 \times 3 \times 12.40) - (3,500 \times 3 \times 12.00) = 1,400 \text{ unfavorable} \]
- **Labor quantity variance**
  \[ (3,500 \times 3 \times 12.00) - (3,600 \times 3 \times 12.00) = 1,200 \text{ favorable} \]
- **Total overhead variance**
  \[ 71,300 - 72,000^{*} = 700 \text{ favorable} \]

*(1,200 \times 3 \text{ hours}) \times 20.00^{*}


Polar Vortex Corporation experienced the following variances: materials price $250 F, materials quantity $1,100 F, labor price $700 U, labor quantity $300 F, and overhead $800 F. Sales revenue was $102,700, and cost of goods sold (at standard) was $61,900. Determine the actual gross profit.

**Solution**

<table>
<thead>
<tr>
<th>Sales revenue</th>
<th>$102,700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of goods sold (at standard)</td>
<td>61,900</td>
</tr>
<tr>
<td>Standard gross profit</td>
<td>40,800</td>
</tr>
<tr>
<td><strong>Variances</strong></td>
<td></td>
</tr>
<tr>
<td>Materials price</td>
<td>$ 250 F</td>
</tr>
<tr>
<td>Materials quantity</td>
<td>1,100 F</td>
</tr>
<tr>
<td>Labor price</td>
<td>700 U</td>
</tr>
<tr>
<td>Labor quantity</td>
<td>300 F</td>
</tr>
<tr>
<td>Overhead</td>
<td>800 F</td>
</tr>
<tr>
<td><strong>Total variance favorable</strong></td>
<td>1,750</td>
</tr>
<tr>
<td><strong>Gross profit (actual)</strong></td>
<td>$ 42,550</td>
</tr>
</tbody>
</table>

Larkin Company accumulated the following standard cost data concerning product I-Tal.

- Direct materials per unit: 2 pounds at $5 per pound
- Direct labor per unit: 0.2 hours at $16 per hour
- Manufacturing overhead: Allocated based on direct labor hours at a predetermined rate of $20 per direct labor hour

Compute the standard cost of one unit of product I-Tal.

The standard cost of product 777 includes 2 units of direct materials at $6.00 per unit. During August, the company bought 29,000 units of materials at $6.30 and used those materials to produce 16,000 units. Compute the total, price, and quantity variances for materials.

The standard cost of product 5252 includes 1.9 hours of direct labor at $14.00 per hour. The predetermined overhead rate is $22.00 per direct labor hour. During July, the company incurred 4,000 hours of direct labor at an average rate of $14.30 per hour and $81,300 of manufacturing overhead costs. It produced 2,000 units.

(a) Compute the total, price, and quantity variances for labor. (b) Compute the total overhead variance.

Tropic Zone Corporation experienced the following variances: materials price $350 U, materials quantity $1,700 F, labor price $800 F, labor quantity $500 F, and overhead $1,200 U. Sales revenue was $92,100, and cost of goods sold (at standard) was $51,600. Determine the actual gross profit.
CONTINUING PROBLEMS

CURRENT DESIGNS

CD25 The executive team at Current Designs has gathered to evaluate the company’s operations for the last month. One of the topics on the agenda is the special order from Huegel Hollow, which was presented in CD2. Recall that Current Designs had a special order to produce a batch of 20 kayaks for a client, and you were asked to determine the cost of the order and the cost per kayak.

Mike Cichanowski asked the others if the special order caused any particular problems in the production process. Dave Thill, the production manager, made the following comments: “Since we wanted to complete this order quickly and make a good first impression on this new customer, we had some of our most experienced type I workers run the rotomold oven and do the trimming. They were very efficient and were able to complete that part of the manufacturing process even more quickly than the regular crew. However, the finishing on these kayaks required a different technique than what we usually use, so our type II workers took a little longer than usual for that part of the process.”

Deb Welch, who is in charge of the purchasing function, said, “We had to pay a little more for the polyethylene powder for this order because the customer wanted a color that we don’t usually stock. We also ordered a little extra since we wanted to make sure that we had enough to allow us to calibrate the equipment. The calibration was a little tricky, and we used all of the powder that we had purchased. Since the number of kayaks in the order was fairly small, we were able to use some rope and other parts that were left over from last year’s production in the finishing kits. We’ve seen a price increase for these components in the last year, so using the parts that we already had in inventory cut our costs for the finishing kits.”

Instructions

(a) Based on the comments above, predict whether each of the following variances will be favorable or unfavorable. If you don’t have enough information to make a prediction, use “NEI” to indicate “Not Enough Information.”

(1) Quantity variance for polyethylene powder. (5) Quantity variance for type I workers.
(2) Price variance for polyethylene powder. (6) Price variance for type I workers.
(3) Quantity variance for finishing kits. (7) Quantity variance for type II workers.
(4) Price variance for finishing kits. (8) Price variance for type II workers.

(b) Diane Buswell examined some of the accounting records and reported that Current Designs purchased 1,200 pounds of pellets for this order at a total cost of $2,040. Twenty (20) finishing kits were assembled at a total cost of $3,240. The payroll records showed that the type I employees worked 38 hours on this project at a total cost of $570. The type II finishing employees worked 65 hours at a total cost of $796.25. A total of 20 kayaks were produced for this order.

The standards that had been developed for this model of kayak were used in CD2 and are reproduced here. For each kayak:

- 54 pounds of polyethylene powder at $1.50 per pound
- 1 finishing kit (rope, seat, hardware, etc.) at $170
- 2 hours of type I labor from people who run the oven and trim the plastic at a standard wage rate of $15 per hour
- 3 hours of type II labor from people who attach the hatches and seat and other hardware at a standard wage rate of $12 per hour.

Calculate the eight variances that are listed in part (a) of this problem.

WATERWAYS

(This is a continuation of the Waterways problem from Chapters 19–24.)

WP25 Waterways Corporation uses very stringent standard costs in evaluating its manufacturing efficiency. These standards are not “ideal” at this point, but management is working toward that as a goal. This problem asks you to calculate and evaluate the company’s variances.

Go to the book’s companion website, at www.wiley.com/college/weygandt, to find the completion of this problem.