

The Penultimate Cash Flow Problem

William Cress Ph.D, CPA
Kenneth Winter Ph.D, CPA
University of Wisconsin-La Crosse

Abstract

This article contains a cash flow statement problem which, while innocuous at first glance, should challenge even the most experienced statement preparer. The point of the exercise is that one attribute students need to acquire in the accounting curriculum is the ability to solve daunting technical problems. Tasks such as the penultimate cash flow problem require the solver to have insight into the articulation of financial statements as well as extensive knowledge of accounting algorithms.

The article serves as a challenge to the reader to create the “ultimate” cash flow problem. The “penultimate” cash flow statement presented in this article, and the ultimate cash flow problem yet to be created, are intended for use in intermediate accounting. Let the contest begin!

The Penultimate Cash Flow Problem

William Cress Ph.D, CPA *
Kenneth Winter Ph.D, CPA
University of Wisconsin-La Crosse

* corresponding author
cress.will@uwlax.edu
608-785-8094
Wimberly Hall
La Crosse, WI 54601

Problem solving is a crucial skill for all business people and especially accountants. Many have said it but perhaps the then Big Eight said it best, "Individuals ... must be able to use creative problem solving skills in a consultative process (6:1989).

The statement of cash flows topic provides an opportunity for developing and assessing students' problem solving skills and their understanding of the flow of information about economic events through the accounting system and into a set of articulated financial statements. To solve the problem in this article, students need to be exposed to topics typically covered in intermediate accounting.

This paper is entitled "The Penultimate Cash Flow Problem" to serve as a challenge to others to develop the "ultimate" cash flow problem. The objective is to maximize the number of steps needed to derive one of the cash flow statement line items. For example, the "penultimate" problem requires nine steps to derive depreciation expense. The steps are set forth in the Instructor Notes. In order to establish a level playing field for those competitors who wish to formulate the "ultimate cash flow problem," the following three rules are set forth. First, a two-year comparative balance sheet is the only financial statement that can be provided. Second, no more than seven accounts may be used on the comparative balance sheet. Third, the amount of additional information that may be provided is limited to 100 words.

Deadline for submission of entries is 12/31/06. Entries should contain "Instructor Notes" similar to this article. Entries should be sent to Bill Cress at cress.will@uwlax.edu

The winning entry will be published in *Accounting Instructors' Report* in 2007.

Note to the student: This statement of cash flows problem is not intended to reflect the reality of statement preparation. Rather, it is intended to challenge your problem-solving skills and your understanding of the flow of information about economic events through the accounting system and into a set of articulated financial statements.

To complete the problem requirement one needs an understanding of the accounting for (1) disposal of operating assets, (2) troubled debt restructuring, (3) stock dividends, (4) earnings per share, and (5) noninterest-bearing notes. Be certain that you review these topics before attempting this problem.

**Porter Corporation
Comparative Balance Sheet**

	<u>12/31/02</u>	<u>12/31/03</u>
Cash.....	\$ 27,000.....	145,244
Equipment.....	170,000.....	110,000
-Accumulated Depreciation	(50,000).....	(33,000)
Total Assets.....	\$147,000.....	222,244
Notes Payable.....	\$ 40,000.....	61,600
Common Stock (\$10 par value).....	70,000.....	110,000
Additional Paid-in Capital	13,000.....	18,000
Retained Earnings.....	24,000.....	32,644
Total Liabilities & Stockholders' Equity.....	\$147,000.....	222,244

Additional Information:

1. On January 2, equipment was purchased, with 80% of the purchase price financed by a three-year noninterest-bearing note and the balance paid in cash. The note was appropriately recorded using a 10% discount rate.
2. On March 2, equipment having a book value of \$90,000 was sold for \$80,000 cash.
3. On July 1, Porter Corporation transferred to a creditor 3,000 shares of its common stock in full settlement of a promissory note payable. A gain of \$7,300 was recognized.
4. On October 2, a 10% stock dividend was declared and distributed.
5. Earnings per share for 2003 is \$2.24.

Required: Calculate depreciation expense.

Instructor Notes

The Strategy

A ledger account is a linear equation. As long as there is only one unknown, the equation can be solved. When there are two unknowns, one of them must be determined by some other way before the remaining unknown can be computed. That way is to follow the trail to the “root” account for which there is only one unknown.

Step 1: Finding the Root Account

The obvious starting point in finding depreciation expense is to analyze the accumulated depreciation account. However, Porter Corporation describes disposal of equipment without providing sufficient information for calculating the debit to accumulated depreciation. At this point one must find the cost of the equipment that had been sold by analyzing the equipment account. Unfortunately, one must know the cost of the equipment acquired. To find the cost of the equipment acquired, one must be able to calculate the amount of the promissory note given in exchange for the equipment. Once again, one finds two events affecting the account to be analyzed. To find to amount of the promissory note, one must know the amount of the promissory note settled in the troubled debt restructuring. To do that, one must first determine the fair value of the common stock given to settle the debt. This requires an analysis of the common stock accounts. In addition to stock issued in the debt restructuring, stock was also issued in a stock dividend. To determine changes in the paid-in capital accounts from the stock dividend, one must determine the value of the stock dividend by determining the charge to retained earnings. In analyzing retained earnings, one finds two changes: the stock dividend and net income. Net income can be found in the calculation of EPS, which requires a calculation of the weighted-average number of shares outstanding. The root account, then, is retained earnings.

Step 2: Calculate the weighted-average number of shares and then net income.

$$\begin{array}{r} 1/1 \quad \text{shares of 7,000 X 1.1 X 0.50 year} = \quad 3,850 \\ \text{plus} \\ 7/1 \quad \text{shares of 10,000 X 1.1X 0.50 year} = \quad \underline{2,750} \\ \text{weighted-average number of shares} \quad \underline{9,350} \end{array}$$

Since net income divided by 9,350 equals \$2.24, net income equals \$20,944.

Step 3: From an analysis of retained earnings one can determine the value of the stock dividend.

$$\begin{array}{r} \text{Beginning RE + Net Income - Stock Dividend} = \text{Ending RE} \\ 24,000 \quad + \quad 20,944 \quad - \text{Stock Dividend} = 32,644 \\ \text{Hence, Stock Dividend} = \underline{\underline{\$12,300}} \end{array}$$

Step 4: Knowing the value of the stock dividend allows one to determine how much of the increase in Additional Paid-in Capital came from the stock dividend and how much came from the troubled debt restructuring transaction.

Stock Dividend Entry:

Retained Earnings	12,300	
Common Stock		10,000
Additional Paid-in Capital		2,300

Thus, \$2,700 of the \$5,000 increase in Additional Paid-in Capital came from the troubled debt restructuring transaction.

Troubled Debt Restructuring Entry:

Notes Payable	40,000	
Common Stock		30,000
Additional Paid-in Capital		2,700
Gain on Trouble Debt Restructuring		7,300

Step 5: The fair value of the common stock given in settlement of the promissory note payable is equal to the sum of the changes in the Common Stock and Additional Paid-in Capital accounts that were not due to the stock dividend. That sum is \$32,700.

Step 6: Given that a \$7,300 gain was recognized on the restructuring, the book value of the note payable must have exceeded the value of the common stock by that amount. Hence, the Notes Payable account had been reduced by \$40,000.

Step 7: The remaining change in the Notes Payable account represents the January 2 issuance value, increased for one year's interest accrued at the rate of 10%. Since \$61,600 equals 110% of the issuance value, the issuance value was \$56,000. Since \$56,000 equals 80% of the financing, the cost of the equipment purchased was \$70,000.

Step 8: The Equipment account now represents a linear equation with one unknown. Given that the account decreased by \$60,000, the cost of the equipment sold must have exceeded the \$70,000 cost of the equipment purchased by \$60,000. Hence, the cost of the equipment sold was \$130,000.

Step 9: One can now reconstruct the sale of equipment journal entry and conclude the accumulated depreciation account was reduced by \$40,000. The Accumulated Depreciation account is now a linear equation with one unknown, that being depreciation expense of \$23,000.

Sale of Equipment Entry:

Cash	80,000	
Accumulated Depreciation	40,000	
Loss on Disposal of Equipment	10,000	
Equipment		130,000

Porter Corporation
Statement of Cash Flows
For the year ended 12/31/03

Cash from operations	
Net Income.....	\$20,944
Adjustments to reconcile net income to net cash proceeds provided by operations	
Plus Depreciation Expense	23,000
Loss on sale of Equipment.....	10,000
Interest on Note.....	5,600
Less Gain on Restructuring.....	(7,300)
Cash from Operations	52,244
Cash from Investing	
Purchased Equipment.....	(14,000)
Sold Equipment.....	80,000
Cash from Investing.....	66,000
Cash from Financing	
No financing transactions	
Net increase in cash	118,244
Cash at beginning of year	27,000
Cash at end of year.....	145,244
Events not involving cash	
Extinguished note (\$40,000) in exchange for 3,000 shares of common stock	
Purchased equipment with note \$56,000	

REFERENCES

Arthur Andersen & Co., Arthur Young, Coopers Lybrand, Deloitte Haskins & Sells, Ernst & Whinney, Peat Marwick Main & Co., Price Waterhouse, and Touche Ross. 1989. *Perspectives on Education: Capabilities for Success in the Accounting Profession*. Self-published 1989.