

FIRST MOTORS CORPORATION: A CLASSROOM CASE ON IMPAIRMENTS

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ABSTRACT

This case requires a detailed analysis of impairments of both long-lived assets and goodwill for First Motors Corporation, a fictitious automobile company. By integrating multiple issues into this case, students are presented with some of the complexities and interrelationships that are seen in practice. To properly prepare solutions to this case, students must successfully read, interpret, and apply both accounting standards and concept statements. The use of judgment in choosing a discount rate for present value computations is an important component of this case. In fact, an earnings management issue and resulting conflict between First Motors Management and the company's auditor revolves around the discount rate choice. Additionally, the suggested questions provided with the case require that students address components of the conceptual framework in the context of the impairment standards. This case can be used in upper division financial reporting classes at either the undergraduate or graduate level.

Key words: Impairment, goodwill, long-lived assets, discount rate

BACKGROUND

It is currently 2013 and you are a member of the engagement team assigned to audit First Motors Corporation for the year ending 12/31/2012. First Motors Corporation is a car manufacturing company focused on moving from the production of gasoline-based cars to the production of cars

based on alternative fuel sources. It was one of the first car companies to successfully produce hybrid-based vehicles in the United States. First Motors has successfully maintained car sales and retained valuable employees while creating modern, efficient cars.

By 2008, First Motors was manufacturing two vehicles, both of which are still being manufactured today. One model is a hybrid-powered vehicle that can be customized in style and features for any purchaser around the globe. This model, called the Passaic, is manufactured in Detroit, Michigan, close to the company's corporate headquarters. First Motors also manufactures a gasoline-powered model, the Mendoza, at its plant in Lorain, Ohio.

In 2008, to take advantage of its alternative fuel source expertise, First Motors purchased a large competitor, Macinaw Motors Corporation, which had made significant progress with hydrogen-powered cars. As the United States is moving toward alternative energy sources, hydrogen is increasingly being used as a fuel source to replace gasoline. To achieve such progress, several processes can be used to make hydrogen. According to the National Hydrogen Association (2006), hydrogen can be made from water, biomass, coal, and natural gas. Much of the hydrogen produced today comes from steam reforming natural gas. Alternatively, an electrolyzer can be used to separate water into its components, oxygen and hydrogen. The hydrogen can then be cooled down to form liquid hydrogen which can be stored at hydrogen fuel stations. Macinaw Motors had experimented with several hydrogen technologies but eventually settled on the use of liquid hydrogen in an internal combustion engine as the most effective way to make substantial progress with hydrogen as an alternative fuel.

Due to Macinaw Motors' valuable research and development program, operating efficiencies, and exceptional reputation, part of the purchase price was allocated to goodwill. The amount recorded as goodwill was \$1.3 billion, or the difference between the \$5 billion purchase price (fair value) of Macinaw Motors as a whole and the \$3.7 billion fair value of its identifiable net assets.

When First Motors purchased Macinaw Motors, the combined company retained the name First Motors Corporation. Although First Motors and Macinaw Motors merged, the former First Motors is operated as the First Motors Division and the former Macinaw Motors is operated as the Macinaw Motors Division. Each division acts as a component of the enterprise that earns revenues and incurs expenses from engaging in its own business activity. Additionally, each division is reviewed by the enterprise's chief operating decision maker to assess its performance and each division has its own discrete set of financial information.

At the time of the purchase, Macinaw Motors had three manufacturing plants, all of which are still operating today. Each plant is used to produce one car model. Plant 1 is located in Irvine, California, where the hydrogen-powered Mankato is produced. Plant 2 is located in Mishawaka, Indiana, where the hydrogen-powered Sheboygan is produced. Plant 3 is located in Braselton, Georgia, where the gasoline-powered Spokane is produced.

When Macinaw Motors was purchased in 2008, executives at First Motors believed that consumers were still purchasing gasoline-powered vehicles because their purchase price was still less than that of similarly equipped hybrid-based or hydrogen-based vehicles. Management of First Motors plans to convert Plant 3 to manufacture a hydrogen-based vehicle at some point in the future. However, for the next several years, First Motors wants to capitalize on the market for gasoline-powered vehicles and Plant 3 will continue to be used in the production of gasoline-powered cars.

In late 2008, management began retooling Plant 3 of the Macinaw Division to create a new, efficient, and highly desirable gasoline-powered model of the Spokane. To retool Plant 3, the

division incurred substantial equipment costs including the costs of body assembly jigs, welding equipment, conveyors, robots, and a new platform. Management decided to retool the plant and continue with a new model Spokane under the assumption that there was going to be a significant increase in oil supply from expected oil reserves in the Arctic National Wildlife Refuge of Alaska (ANWR). It was believed that these oil reserves would help keep the price of gasoline down which, in turn, would continue to stimulate demand for gasoline-powered cars. The retooling process was completed during 2009.

THE CASE

In 2012, First Motors management was surprised to learn that oil reserve estimates were inaccurate for the ANWR. After debate over this controversial drilling location, legislation was finally passed in 2010 that included approval for ANWR oil drilling. Some citizens of Alaska and other states were angered by the new law and protested the approval of oil drilling. Nevertheless, in 2012, drilling proceeded in one small select and authorized area. Results of the initial drilling revealed that the expected oil reserves in that location were not nearly as large as projected. Due to the ANWR finding and turmoil in the Middle East, there was a spike in gasoline prices during 2012 and the sales of the Spokane model did not meet expectations.

Closure of Plant 3 was considered; however, for four reasons, management decided to keep Plant 3 open. First, management believed the spike in gasoline prices was not permanent and that other oil reserves would help to moderate future oil prices. Second, significant expenditures had already been made on the plant, and it would not require large amounts of additional capital in the near future. Third, consumers were still purchasing gasoline-powered vehicles because of the continued price differential between these vehicles and vehicles using alternative energy sources. Finally, because of union contracts, any assembly line workers laid off would be paid wages by the Macinaw Division at 75 percent of straight-time pay. Thus, management determined that it was not the appropriate time to convert Plant 3 to a hydrogen-based plant.

Impairment

Despite these reasons to keep Plant 3 open, its long-lived assets will not generate the net cash flows originally anticipated when the plant was retooled. In fact, as the result of very deep discounting of the Spokane's retail price during the year, it is possible that the final numbers for 2012 may show negative operating cash flows related to Plant 3. Accordingly, management determined that an impairment test must be performed for the Plant 3 long-lived assets. To determine if the assets are impaired, management compares the future undiscounted cash flows of Plant 3 to the book value of the plant's long-lived assets. As of 12/31/2012, the net book value of Plant 3's property, plant, and equipment is \$1.4 billion, before any write-down from impairment is recorded. Additional relevant information is as follows:

- The estimated remaining life of the assembly line equipment is 11 years.
- Yearly anticipated net cash flows for each of the next 11 years is \$62,504,377.
- It is assumed that the land, buildings, and equipment for Plant 3 can be sold for \$30 million at the end of this 11-year period.
- The total estimated undiscounted net cash flows related to Plant 3 over the next 11 years are \$717,548,147 ($(\$62,504,377 \times 11) + \$30,000,000$).

The assembly-line and related equipment are considered the primary assets of Plant 3. In measuring the impairment loss for Plant 3, management considers various valuation methods for this equipment. It is determined that most of the equipment has no alternative use and that a sales value is not readily available. Accordingly, following the guidance of Statement of Financial Accounting Standards (SFAS) No. 157 (FASB, 2006), management determines that the fair value of the Plant 3 long-lived assets is best measured by the present value of its future net cash flows.

The company's management measures the present value of future cash flows using a risk-free discount rate of 3 percent. Because expected net cash flows are not adjusted for inflation, management does not incorporate an inflation factor into the discount rate. Using the 3 percent rate, the present value of the net cash flows is \$600 million, resulting in an impairment loss of \$800 million (book value of long-lived assets of \$1.4 billion less \$600 million fair value as determined by discounted future cash flows).

Once the impairment loss is determined, management is not sure how to allocate it and decides to wait for its auditors to assist in the allocation. The property, plant, and equipment of Plant 3 can be divided into four primary categories: land; buildings; robots and related equipment; and all other equipment. In anticipation of the audit, the following information is compiled regarding these Plant 3 assets:

TABLE 1

Plant 3: Property, Plant, and Equipment

	<u>Net Book Value</u>	<u>Fair Value</u>
Land	\$500,000	\$1,000,000*
Buildings	20,000,000	20,000,000*
Robots and Related Equipment	140,000,000	Not Available
Other Equipment	<u>1,239,500,000</u>	<u>Not Available</u>
Total	<u>\$1,400,000,000</u>	<u>\$21,000,000</u>

* Without undue costs, the fair value of the land and buildings are obtained from an outside appraisal.

The 2012 Audit

In early 2013, you go with your audit team to the First Motors headquarters in Detroit, Michigan for the audit, for the year ending December 31, 2012. Your team gets a quick tour of the factory, and you learn about various changes in the car industry, including the lack of oil reserves in the ANWR. You know that an impairment loss was recorded for the Plant 3 assets, and you are impressed with management's initiative in measuring, recording, and disclosing the loss. However, you wonder if an impairment loss should have been recorded for the Mendoza, the other gasoline-powered car produced by First Motors. Fortunately, First Motors maintains cash flow and sales information on a plant by plant basis and you quickly learn that during 2012, sales of the Mendoza remained strong because of its compact size and excellent gas mileage.

After reviewing the documentation supporting the impairment charge, you note that future cash flows are discounted at a risk-free rate of 3 percent and that this rate does not incorporate an

inflation factor because the cash flow estimates were not adjusted for inflation. You vaguely recall from a college class that a discount rate should incorporate a risk premium and although you are relatively new to auditing, you know that 3 percent is a rather low discount rate. You approach management questioning this low discount rate and they become very defensive in explaining that 3 percent is the rate for all the Plant 3 assets and that no other rate would be appropriate. Upon inquiry about risk being considered in such a rate, management stubbornly states that the 3 percent rate is fine. When asked for justification, management reasons that they reached this conclusion due to the fact that a risk premium could not be adequately measured. Additionally, they refer to Statement of Financial Accounting Concepts No. 7 (FASB 2000), which suggests that in such a situation a risk-free rate can be used.

In re-evaluating the net cash flows, and after discussions with management, you agree that the cash flows are in fact the single, most-likely amount in a range of possible estimated amounts or the best estimate for the next 11 years (the expected life of the primary assets of Plant 3). However, you believe risk is not factored into these cash flow estimates. You suggest adding a risk premium to the discount rate, to incorporate fully the risk inherent in the cash flows. After consultation with the firm's valuation experts, you are told that a risk premium is appropriate. Also, based on their experience in the auto industry and review of First Motors and Plant 3, the valuation experts suggest that an appropriate risk premium is 6 percent. From their advice, you conclude that 9 percent (3 percent risk-free rate + 6 percent risk premium) is a much more reasonable rate to use in discounting the cash flows.

You are very proud of your findings and hope to make a good impression on your audit manager, Mr. Bother. Although you had briefly discussed with him the magnitude of the impairment loss and the discount rate used, he left the calculations and details up to you. When you approach him, however, he appears extremely frustrated and explains that First Motors never even complied with the yearly test for goodwill impairment, as specified in SFAS No. 142 (FASB 2001). You suggest that the goodwill impairment test may be unnecessary because an impairment loss for the plant assets has already been recorded by management.

Mr. Bother shakes his head at you, grumbles, and tells you in a very stern manner that impairment of long-lived assets and goodwill often go hand in hand. He explains that upon acquisition of Macinaw Motors, \$1.3 billion was recorded as goodwill (the excess of the purchase price over the fair value of the identifiable net assets of Macinaw Motors).

Mr. Bother explains to you that the fair value must be re-evaluated and compared to the book value. Furthermore, you heard some members of management grumbling about losing their bonuses if "these auditors keep coming up with more impairment charges." You realize management has significant bonuses tied to the 2012 target profits, and a large impairment loss will cause them to lose the expected bonuses. A quick review shows that the largest total impairment losses that can be recorded before the target profit will be missed and the management bonuses lost is \$1.75 billion. Your calculation is based on two facts: (a) 2012 unaudited net income before impairment charges is \$2.25 billion and (b) the management bonus arrangement states that bonuses will only be paid if 2012 net income exceeds \$.5 billion.

You go home that evening and realize that you do not really understand what Mr. Bother said to you about goodwill impairment. For one thing, you do not know if Mr. Bother was referring to the fair value and book value of the entire company or just the Macinaw Division. You print out the firm's training material on impairments and spend the rest of the evening reading about SFAS No. 142.

The next day, you attend a meeting with management and Mr. Bother. During the meeting, you are first excited when you hear management indicate that they made an error in the recorded impairment charge for long-lived assets. You think that management finally realizes the necessity of incorporating a risk factor into the discount rate. However, your jubilation is quickly deflated when management indicates that the impairment testing for long-lived assets should have been done at a different level. In particular, management states that impairment testing of long-lived assets should have been for the company as a whole (Plant 1, Plant 2, and Plant 3 of the Macinaw Division, plus the two plants from the First Motors Division) and that the result is the impairment charge should not have been recorded. Management claims this result would hold because the decline in the value of the Plant 3 long-lived assets could be offset by the increase in the value of the long-lived assets at the other plants. It is further explained that the individual who made the error is no longer with the company.

Mr. Bother explains to management that the issue will be examined more closely. Before any further explanation can be provided, members of management are called away for another meeting. As you leave the meeting you realize that you do not know whether management is correct about combining long-lived assets for all plants of First Motors to perform the impairment test. Furthermore, you wonder if impairment testing is done for both plant assets and goodwill, if it can be a combined test, and if it needs to be done in a specific order.

After reviewing your notes and the company records, you also begin to wonder if a mistake was made in the original calculation of the impairment loss related to long-lived assets. In particular, for purposes of the present value calculations, you note that the land and buildings are assumed to be sold at the end of 11 years. However, you recall from discussions with management that manufacturing plants are used for many years and are retooled over and over. Accordingly, it does not seem appropriate to assume the sale of the land and buildings after 11 years. After all, according to the accounting records, the buildings have a remaining useful life of 25 years and the land has an unlimited useful life.

A couple of days earlier, the valuation method for any possible goodwill impairment testing was discussed. It was determined that no fair value was readily available for First Motors or its divisions. Additionally, because the stock price of First Motors was so volatile over the past year, the market capitalization was not a good indicator of the fair value of First Motors. You, Mr. Bother, and management came to an agreement that discounted future cash flows was the appropriate valuation technique to use. However, the calculations provided by management incorporated a risk-free discount rate of 3 percent. You took the initiative to do your own calculations based on an 8 percent discount rate, which includes a 5 percent risk premium. The 5 percent risk premium was recommended by the same valuation experts from the firm who recommended a 6 percent risk premium for use in the Plant 3 long-lived asset impairment.

Management calculations and your calculations are summarized below in Tables 2 and 3. The information in the first portion of Table 2 represents the total fair value of First Motors and its divisions based on discount rates of 3 percent and 8 percent, respectively. Presented in the second portion of Table 2 is the estimated fair value of identifiable net assets based on discount rates of 3 percent and 8 percent, respectively. Finally, presented in Table 3 is a summary of the book value of identifiable net assets and the book value of net assets **before recording any impairment for long-lived assets** (the difference represents the book value of goodwill).

TABLE 2**Fair Value Information**

	<u>3% Discount Rate</u>	<u>8% Discount Rate</u>
<u>Total Fair Value:</u>		
First Motors Division	\$2,600,000,000	\$2,045,000,000
Macinaw Division	<u>3,200,000,000*</u>	<u>2,550,000,000*</u>
Total (First Motors)	<u>\$5,800,000,000</u>	<u>\$4,595,000,000</u>
<u>Fair Value of Identifiable Net Assets:</u>		
First Motors Division	\$2,500,000,000	\$2,010,000,000
Macinaw Division	<u>2,800,000,000</u>	<u>2,200,000,000</u>
Total (First Motors)	<u>\$5,300,000,000</u>	<u>\$4,210,000,000</u>

* Please note that the total fair value for the Macinaw Division includes the combined net assets of Plants 1, 2, and 3.

TABLE 3**Book Value**

	<u>Identifiable Net Assets</u>	<u>Goodwill</u>	<u>Net Assets</u>
First Motors Division	\$2,000,000,000	\$0	\$2,000,000,000
Macinaw Division	<u>3,000,000,000</u>	<u>1,300,000,000</u>	<u>4,300,000,000</u>
Total (First Motors)	<u>\$5,000,000,000</u>	<u>\$1,300,000,000</u>	<u>\$6,300,000,000</u>

QUESTIONS

(Assume that currently enacted GAAP is still applicable in the year 2012)

Part 1

Please provide detailed explanations in answering each of the following questions. For questions 2a, 3a, 4a and 5, provide a citation to the appropriate accounting standard that supports your discussion.

1. Diagram the organizational structure of First Motors Corporation.
2.
 - a. Under what circumstances is a company required to perform impairment testing for long-lived assets?
 - b. Was impairment testing of long-lived assets required for First Motors? Why or why not?
3.
 - a. At what level is impairment testing done for long-lived assets?
 - b. Are the executives of First Motors correct in suggesting that the impairment of long-lived assets at Plant 3 is not needed because the decline in the value of the Plant 3 assets can be offset by the increase in the fair value of long-lived assets at other plants?
4.
 - a. At what level is impairment testing done for goodwill?

- b. For First Motors, at what level should this testing be done (i.e., should it be done for the company as a whole or just for the Macinaw Division)?
5. If impairment testing of both goodwill and long-lived assets is required, in what order is it done?

Part 2

Please provide detailed explanations in answering each of the following questions. Provide citations to the standards for each of the following: questions 6a, 7a, 8a, and 10a. Additionally, it is suggested that you provide citations to SFAC Number 2 (FASB 1980) when answering questions 10b, 11, and 12.

6. a. Prepare a schedule showing the computation of the long-lived asset impairment loss at both the 3 percent discount rate and the 9 percent discount rate. In the information provided in the case, it was assumed that the land and buildings for Plant 3 were sold at the end of 11 years. Be sure to consider and discuss if the land and buildings' "assumed sale" after 11 years is appropriate or if the "assumed sale" should be at the end of the buildings' useful life.
- b. Do you think that management is correct in using the 3 percent rate, or are the auditors correct in suggesting the 9 percent rate, or can either interest rate be justified? Provide a detailed answer to this question including a discussion about a risk premium. Be sure to consider the type of cash flow information provided by management.
7. a. Once an impairment of long-lived assets is determined, how is the write-down allocated among multiple assets? Prepare a schedule showing this allocation for Plant 3 (use the impairment loss determined based on the discount rate you chose in question 6b).
- b. Refer to your answer for part a. After the allocation is completed, will each long-lived asset (or asset category) that First Motors wrote down be stated at fair value? Why or why not?
- c. How will the impairment loss and the corresponding reduction of book value to the long-lived assets affect future depreciation expense to be recorded, (potential) future impairment charges and/or future gains or losses on the sale of the long-lived assets?
8. a. Determine the implied goodwill value and the goodwill impairment loss, if any, using both a 3 percent and an 8 percent discount rate. Which rate should be used and why?
- b. The valuation experts suggested that the risk premium (6 percent) in discounting the free cash flows from Plant 3, for purposes of the long-lived asset impairment, should exceed the risk premium (5 percent) in discounting the cash flows for the Macinaw Division. Why is this difference in a risk premium justified?
9. a. Will management still receive bonuses if the 3 percent discount rate is used in the calculations? If the 9 percent and 8 percent discount rates are used?
- b. What is earnings management?
- c. Discuss the relationship between earnings management and the choice of discount rate to be used in discounting future cash flows for the long-lived asset impairment of Plant 3 and the goodwill impairment of the Macinaw Division.

10. Once written down because of impairment, can long-lived asset write-downs or goodwill write-downs be recovered if predictions change (i.e., the fair value subsequently increases)? Is there such a thing as a write-up for either long-lived assets or goodwill?
11.
 - a. Regarding reliability of financial information, comment on the verifiability and representational faithfulness characteristics of the conceptual framework as they relate to accounting for impairments. Be sure to incorporate First Motors into your discussion.
 - b. Discuss the trade-off between the relevance and reliability of reporting long-lived assets and goodwill at fair value. How does the principle of conservatism apply to this trade-off? Consider the case of First Motors in your discussion.
12. Find a real-world company that has taken an impairment charge (either for goodwill or long-lived assets) and discuss how the relevant information was disclosed in the notes to the financial statements and the affect the charge had on net income or net loss of the company.

TEACHING NOTES

Teaching notes are available from the editor. Send a request from the “For Contributors” page of the journal website, <http://gpae.bryant.edu>.

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