THE M/TV JOURNAL

THE JOURNAL OF THE INT'L MACHINERY/TECHNICAL VALUATION COMMITTEE OF THE AMERICAN SOCIETY OF APPRAISERS

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CONTENTS

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Editorial Rambling

George C. Weinberger, ASA

This "editorial business" is something new to me, so please have some patience while I go through a "learning curve."

The newly elected officers of the International Machinery/Technical Valuation Committee, and especially me, appreciate your voting for us in this past election. With the consolidation of two groups, Machinery and Equipment, and Technical Valuation into one, Machinery/Technical Valuation, we all on the combined committee have a challenge ahead of us. Mr. Podwalnys' Chairmen's Corner touches upon this.

On the inside back cover of this and future Journals you will find a listing of the members of the Machinery/Technical Valuation Committee. Please keep this listing handy and contact your local committee member as to any comments, pro or con, on any issues you feel that the committee should be aware of and should address. This committee is your committee and, as such, your feedback is important. Please remember to copy the Chairmen, Mr. Robert B. Podwalny, ASA, in your communication with your committee member. Bob will raise your comments/issues under "new business" during our quarterly committee meetings.

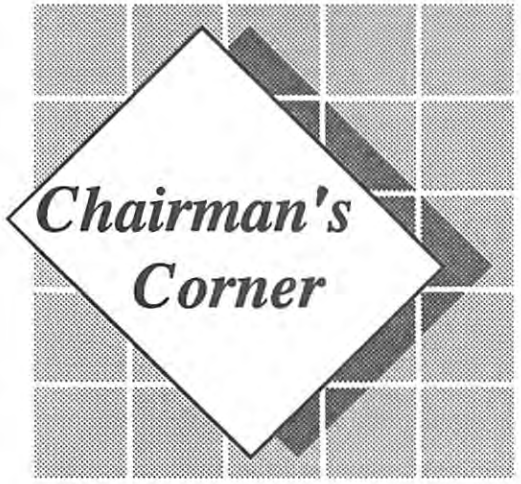
Since I've raised the "issue" of "this committee is your committee," why is it that the majority of articles are authored by committee members and not by the membership of MTV? Remember, that articles appearing in other journals, magazines, newspapers, etc. can be submitted for publication in this Journal providing that you receive that authors written authorization. Try submitting articles, its an easy and quick way to get CONTINUATION EDUCATION credits.

Simply stated, this is your Journal too! Not enough articles to publish a Journal, no Journal gets published.

All articles should be submitted to me on hard copy and on 3-1/2" diskette using Word Perfect format.

Some of the articles appearing in this issue should generate some sort of conversation. If you wish, please comment on the articles directly with the authors and copy me.

Well, that is it for now. Keep those articles coming and I look forward to receiving any and all comments.



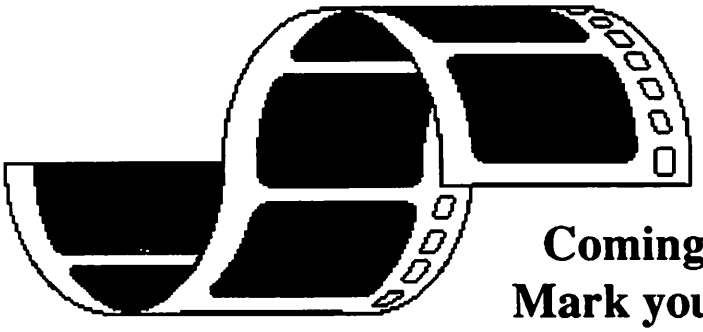
Robert B. Podwalny, ASA

Taking on the chairmanship of a committee is an awesome responsibility especially following in the footsteps of the preceding chairmen such as John Madge, Les Miles, John Connolly and Alan Iannacito. These individuals guided the committee from its infancy to where it is today.

Today we have another challenge. The consolidation of two active committees into one under one new tentative name: "Machinery/Technical Valuation". The name, though approved by both committees, has to also be approved by the various executive committees. Also, the final plan and structure of the new committee has to be presented to the Board Of Governors at the mid-term meeting for their approval before the consolidation can officially take place. It should be pointed out that while the majority of both committees' and their respective membership voted by ballot in favor of the consolidation, there are a few members who do not want the consolidation to take place for what ever reason. This is why we have to make sure everyone understands the purpose and benefits of the consolidation.

After representatives from the two committees reach agreement on the terms and conditions of the consolidation, every member received a full disclosure of not only the minutes but also the terms and conditions proposed. I was shocked to find out that many of the individuals who were opposed to the consolidation never read the material and only relied on the rumors that were floating around. This was even true of some of the members who sit on these committees.

I mention this because we as a combined unit can do so much more for our membership in terms of offering educational programs, a better news journal and demonstrate more unity on vital issues we collectively face as appraisers. We can do it if we put our combined energies toward that direction.



Coming Attraction
Mark your Calendars

The Effects of Contaminants On Value Part II

Monday & Tuesday, February 7-8, 1994
Tropicana Hotel - Las Vegas, Nevada
Registration Fee — $250.00

Speakers: Gregor J. McGregor of McGregor, Shea & Doliner, Boston, MA
Environmental litigator, consultant and teacher

Walter S. Mulica of IEP, Inc., Northborough, MA
Certified Professional Geologist and Senior Hydro-geologist

Anthony J. Rinaldi, ASA of Miller-Rinaldi & Associates, Fort Lee, NJ
Senior ASA designated in Real Property & Technical Valuation

Judy Treichel, Director, Nevada Nuclear Waste Task Force
Las Vegas, NV

The Chairmen of the Real Property and Machinery/Technical Valuation Committees are Ernest Demba, ASA and Robert Podwalny, ASA. The educational co-chairmen for this seminar are Morton Miller, ASA (RP) and Arthur Narverud, ASA (MTV).

Mark Your Calendars Now

Brochure & Registration Form will be mailed early in December.

See the ASA *Newsline* for additional information or call
Sylvia Wade Olson, Seminar Coordinator
Tel: 818-919-5011 or Fax: 818-919-8098

More Miles

Leslie H. Miles, Jr., ASA

ASA LEVEL ME201 COURSE - MAZATLAN, MEXICO

Go South for your vacation! Not only is it warm, but the people are terrific. Although much of Mexico is rural and stark, there is a quiet and refreshing beauty found nowhere else in the world. However, what I most recently discovered was their requirement for education. The Mexican appraisal community is not simply needing appraisal education, they are starving for it.

On Wednesday, June 16, 1993, I arrived in Mazatlan, Mexico the day before the ASA Machinery & Equipment Level ME201 Course, which was to be taught by Mr. Paul Rice and Mrs. Jackie L. Montalvo. This was their second level ME201 course taught in Mexico; the first was held in Guadalajara in February 1993. In Guadalajara, they had 53 students. Subsequently, Mr. Paul Rice and Mr. John Madge taught a Level ME202 Course in Guadalajara. Needless to say, the Courses have been very well received and the program has been very successful.

On Thursday, June 27, I understood there would be approximately 50 students for the course to be held in Mazatlan. This amazed me as I could not imagine that many students would be signing up for a course taught by English speaking instructors. For those not familiar with these educational programs, this is more than twice as many students that normally attend these same courses in the United States. Naturally, this was a pleasant surprise and luckily both instructors were experienced in dealing with such a large student audience. My attendance was strictly voluntary and was more out of interest of our educational program than anything else. I had to see for myself how English speaking instructors would be communicating with other professionals whom only spoke Spanish or, at the very least, limited English.

These International Courses will be of benefit to each and every ASA appraiser in the United States for many reasons. You may now say that your association is the leader in educating the world on valuation theory. There have been courses given in many countries and I would have thought of Mexico as being one of the more challenging. If it wasn't for local participation and assistance, it would be impossible to have successful courses in any country. This brings up the name of Mr. Raul Bracamontes. Mr. Bracamontes has been an International M&E Committee representative for the country of Mexico for many years. Without his enthusiasm, persistent yet cooperative nature and efforts, the courses in Mexico would not have been successful. Mr. Bracamontes translated the course materials for Level ME201 and ME202, coordinated the promotion, scheduling, handouts, and accounting functions. All that was required of International Headquarters was to have qualified instructors show up on time. Mr. Bracamontes' efforts cannot be appreciated without observing him in action. There is not enough good things that can be said for this individual.

It was exciting to see the coverage the Noroeste newspaper gave Mr. Bracamontes and this particular course in the financial section on June 18, 1993.

On Thursday morning, Mr. Bracamontes set up a table at the back of the room and prepared to accommodate a little over 40 people. The room was perfect for this type of seminar as long as the attendance was not greater than 45 or so. As the room became full, I noted an extremely long line outside of the entryway and realized that the room was going to be over crowded. Additional chairs and tables were brought in and after counting 66 students, there was standing room only. Another problem was the radio receivers, which the translators used to translate English to Spanish and visa versa. The translation service brought extras, but did not anticipate a need for greater than 60. Mr. Bracamontes asked the students who could understand English to give up their set for those who could only speak Spanish. This worked out perfect in that 6 students had the capacity to understand English. As the balance of receivers were located in Guadalajara, it was required that they dispatch a runner to bring an additional 12 sets for the next day. This was most accommodating as, in the beginning, it was determined that this would not be possible.

We discussed the room situation with a lady who was in charge of things such as this and the problem was resolved. The lady, who, only as a side note, was very beautiful, arranged for a very large convention room for this course. After lunch, the course was moved to the larger room, which was perfect. All of the special wiring, tables, chairs, and other setup was moved and prepared by the hotel and the translation crew.

I discovered that the course was open for registration even on the day of the attendance. People were still coming in at mid-day and this amounted to a total of 66 students. To the benefit of ASA and to the credit of the two instructors and Mr. Raul Bracamontes, this course was extremely successful and accepted well by those in attendance. The question that was asked the most was when they would be able to take Level ME202 Course. I cannot imagine there would be too much delay in getting a Level ME202 Course for Mazatlan based upon that which I observed.

As stated earlier, the communication system was by means of radio transmitters and receivers. For the instructors, they each had one transmitter with a microphone at approximately chest level and a separate receiver with an earpiece for translating Spanish to English. However, this same earpiece was provided to the students to translate English to Spanish. When the instructors got used to this, they became immune to any confusion that this might create when speaking. In other words, the instructors would wait to hear in English a question that was being asked in Spanish. Mr. Paul Rice became so used to this that one student asked him a question in English and the translator immediately repeated it in Spanish. Mr. Rice indicated at that point that he did not understand the question.

Men usually wear shirts and pants with plenty of pockets and belts that will accommodate clip-ons. Mrs. Jackie L. Montalvo, knowing that she had to be presentable as an instructor, wore a dress that had no pockets or belt. Naturally, she needed to have her transmitter and separate receiver and ended up with a unique adaptation of her purse strap for holding the two instruments.

As we all know, nothing is perfect but I can assure you that the course went as smoothly if not smoother than anyone could have expected. We should be proud of our Education Program and I think a round of applause should be offered to all of those instructors and/or their supporting companies who take their time to participate in the sharing of education.

APPRAISAL CONCEPTS AND THE WOOD PRODUCTS INDUSTRY

By Melvin I. Fineberg, ASA

Presented to the American Society of Appraisers International Appraisal Conference, Seattle, Washington, June 28, 1993

INTRODUCTION

Appraisal concepts in the wood products industry are no different from those of appraising machinery and equipment in any other industry. In order to be readily accepted by the appraisal clientele, the appraisal concepts and process must be universal. However, the applications can, and should, be specific to the appraisal assignment and to the specific industry.

What are the elements of the general appraisal process?

Every textbook probably differs on what is necessary in the appraisal process. "Appraising Machinery and Equipment," published by the American Society of Appraisers, is a good source. The "Uniform Standards of Professional Appraisal Practice" (USPAP) sets minimum standards of what must be contained in an appraisal report. Senior ASA appraisers must adhere to these standards. However, I have segregated the appraisal process into four general areas of applications to assist the reader of the appraisal report in understanding the appraisal.

These processes include identification of the property, data research, analysis, and conclusions. The appraisal process in general should follow these guidelines. Specifically, these guidelines and processes apply to the wood products industry as well. Let's assume that for the remainder of this discussion we are considering one or more of the fair market value concepts; that is, either value for continued use, value in exchange (or for some alternative use), or a level of liquidation (either forced or orderly). The appraiser needs to determine which of these value concepts is appropriate for the purpose and use of the appraisal. With this in mind, the appraiser "sets the table" in the identification section of the appraisal.

IDENTIFICATION

Identification is not merely describing the property or assets being appraised. A good identification as part of the appraisal process, again depending on the purpose and intended use of the appraisal, should include, in various levels of detail, an economic overview, an industry overview, a field inspection of the property appraised, and an identification of the property or assets appraised with enough detail to satisfy the specific requirements of the appraisal.

ECONOMIC OVERVIEW

As a simple example, it becomes relevant to the appraisal process whether or not the general economy is in growth or recession. Is the recession national or regional in nature? Are interest rates going up or down? The critical question facing the appraiser is how these elements of economic overview affect the value, or movement of value, of any machinery or equipment being appraised on a national or regional level. It is not surprising that in a recent 275-page document titled "Pulp and Paper Review," published by Resources Information Systems, Inc., the first 10% to 15% of the text was devoted to general economic forecasts. The truth of the matter is that in poor economic conditions machinery generally does not sell well. Conversely, in prosperous times, with 12, 18, or 24 month deliveries for new machinery, used values may be at a premium. I personally am not aware of any published and universally used depreciation tables that take into consideration the changes in the general economy as they affect machinery values.

Depending on the complexity of the machinery being appraised, the economic overview could encompass the entire United States or be limited to the regional economy. It could also include the world economy. International economics are becoming more important in today's "Global Economy." In any case, the trends or direction of economic factors could be critical to machinery values.

The economic information is readily available, and most financial libraries contain this information. Standard and Poor's Corporation's "Trends & Projections" is one such source. There are many others.

The presentation of this information in the appraisal need not be extensive. In fact, for most machinery and equipment appraisals, this overview need not take up more than one or two sentences. The purpose of this overview is to assist the appraiser in understanding the general economic climate as it pertains to value and to assist the reader of the appraisal in understanding the appraisal process.

INDUSTRY OVERVIEW

Equally important as the general economic overview is the industry overview. Is the industry growing or contracting? Does this effect machinery values? Is the wood products industry growing or contracting? Does this effect the value of a rip saw or a paper converting machine? Is the growth or contraction different in the Pacific Northwest from the Southeastern United States? Does this effect the value of a pulp mill in either region? You can be sure that it does.

What are some sources to be used for an industry overview? Again, as in the case of the economic overview, there are many. Most financial libraries carry reliable general industry information. Standard and Poor's Industry Surveys and the US Industrial Outlook are two such general sources carried in our library. As you are probably aware, Standard and Poor's

surveys are utilized in rating bonds and other financial instruments. Wouldn't this same information be useful in "rating" or valuing machinery?

In addition to the general sources of industry overviews, the appraiser should seek out industry specific sources. Paul F. Ehinger & Associates, Eugene, Oregon, is one such source. Their published report, "Forest Products Industry Report on Mill Closures, Operations, and Other Related Information," could prove extremely valuable to an appraiser of wood products machinery. That report covers mill closures, mill auctions, timber supply, and the chip market in the Northwest, as well as other data. There are many other sources of specific industry data pertaining to saw mills, pulp and paper mills, converting mills, and other specific wood products industries. Trade organizations and trade journals could also be good sources.

Why is this information important and how can it be used? A brief illustration may help. Assume that you are appraising a small independent saw mill for an allocation of purchase price or for ad valorem tax purposes. You have determined that the proper level of value for the purpose and use of the appraisal is fair market value for continued use. After completing your due diligence and investigation, you have determined that the fair market values, based on the three approaches to value, are as follows:

Cost Approach	$5,000,000
Market Approach	$4,500,000
Income Approach	$4,400,000

Before concluding value, you become aware of additional information. The subject company, which does not own its own timber supply, has just lost some timber contracts on Federal land for delivery of needed timber supply. There is no other local source of timber available. Timber now needs to be freighted in from a substantial distance, increasing operating expenses by 35%. What effect might this have on the value of the mill machinery and equipment for continued use?

Obviously, the value would decline—by an amount that needs to be determined. Is the loss of local timber supply a short term or long term situation? Is there a timber shortage potentially affecting other mills in the area? What other questions does the appraiser need answered?

Additional economic obsolescence needs to be considered in the cost approach due to factors external to the machinery. You may want to make further adjustments to your comparable sales used in the market approach to account for your mill not having access to an adequate supply of raw materials. You may also want to make further adjustments to operating expenses in the income approach. A good economic and industry overview can assist the appraiser in arriving at the correct value conclusion.

The industry overview should not be used as filler for the appraisal report. The purpose of the overview is to assist the appraiser in arriving at the proper conclusion of value. Hence, a conclusion is needed as to how the economics of the industry affects the machinery value.

FIELD INSPECTION

Although the current trend is towards desktop appraisals, a field inspection is needed in most cases to properly appraise the machinery and equipment. The field inspection could be critical for many reasons. It is the only means by which the appraiser can properly estimate physical deterioration. A good field inspection should include a facility tour, a review of asset runs and accounting data, a review of engineering and maintenance data, and an inspection and listing of the assets appraised.

The field inspection of a wood products process facility, whether it is a saw mill, paper mill, converting plant, or the like, can prove very useful to the appraiser. The inspection process should start with a tour of the property. It's best to keep in mind the product flow while taking the tour. In this manner, the appraiser may be able to identify potential "bottlenecks" that may effect value. Careful notes should be taken during the initial examination; they will prove helpful later in the appraisal process.

Critical to any process plant, whether it is wood products or any other industry, is the product flow. Ask for schematics or flow diagrams of the process. Many engineering or operating schematics include model and serial numbers of the major machinery. Also included in this type of information could be capacities, drive specifications, and other critical information. It is much easier for the appraiser to gather this information in the plant engineering offices than on the floor of the mill, which could be extremely noisy and potentially dangerous.

Once the appraiser gathers this information, he can return to the mill floor and verify it. This approach in a wood products mill should prove more accurate and less time consuming than creating a detailed itemized listing while on the mill floor; and the mill supervisor and workers will also appreciate this.

In addition, the appraiser needs to be aware of the operating environment of the machinery. The reasons for this are obvious. If the operating environment is messy or hazardous, it could adversely affect the value. But there are other elements of the machinery environment that could easily affect value. What about the location of the machinery within the plant itself?

The following example may illustrate this better: assume that you are appraising certain machinery within a small paper mill for the purpose of financing. You have been instructed by the bank to provide both fair market value for continued use and fair market value for removal.

Paper machines, which are mostly custom built for the buyer's environment and needs, rarely sell used in the open market for removal. But there are secondary markets; in many overseas countries, where wage rates are lower and smaller, slower and smaller machines are in demand. Many paper machines will substantially change their configuration by the time they reach the foreign markets. Sometimes parts of two or more machines may be cannibalized to form one machine for export purposes. This may be the only secondary market for certain machines.

In this example the appraiser needs to carefully analyze the paper machine to determine which parts of the machine are salvageable. Although we use the terms "cannibalize" and "salvageable," it does not necessarily mean that we are talking about liquidation. Fair market value for removal many times approaches, or may even approximate, liquidation in process plants. But the assumption used in fair market value for removal is a "willing seller" without the "compulsion" necessary for liquidation.

The appraiser cannot identify the salvageable parts without a good field inspection. Someone like William Kravas of Northwest Pulp and Paper, Vancouver, Washington, who deals in used paper machinery and provides removal and rebuilding services, could be a good source in assisting this estimating process.

Let's assume that the subject paper machine, approximately 20 years old, has a reproduction cost new of approximately $5 million installed. The appraiser has determined that its fair market value for continued use, because of its age, condition, and market demand, is $2 million. After identifying those parts of the paper machine which are marketable, such as the press rolls, some heaters or pumps, and the drive mechanisms, a search of the used equipment market determined a "used value" of approximately $150,000.

Does the $150,000 represent fair market for removal? Obviously not. What about the cost of removal? The appraiser can either estimate the cost of removal or seek the assistance of an expert to provide the estimate. You will want to know if walls, floors, or even complete buildings need to be removed to remove the machinery. This could have an extreme effect on the machine's removal.

This brings us back to the location of the machinery within the mill. The removal cost cannot be properly estimated without a "field inspection." The removal cost may be $50,000; it may be $100,000; it could even be more. Hence, the actual fair market value for removal, reduced by the cost of removal, could be zero or as high as $100,000 in this example.

Thus, the field inspection should not only include a listing of the machinery and equipment, but also a facility tour, review of maintenance and engineering records (including schematics), along with a review of accounting records, and enough descriptive information to properly appraise the machinery. This appraiser needs to gather all the information to properly appraise the assets.

DATA RESEARCH

While identification of the property is extremely important, no appraisal conclusions can be reached without good data research. For simplification, I have segregated data research into three distinct research areas; cost data, market data, and income (or operating) data.

Cost Data Research

When analyzing cost data for a wood process facility the appraiser needs to be aware of the differences between reproduction cost and replacement cost. If fair market value is the final goal, replacement cost is probably a good starting point for the cost approach. Industry specific data sources, trade publications, etc., may prove helpful in finding new costs of mills of similar capacities. Otherwise, the appraiser may need to establish reproduction cost new by applying a cost index factor to the original cost of the machinery and then adjusting for technological obsolescence, if any. If this is the case, the appraiser needs to search the proper index for the specific machinery appraised. Here again, industry specific sources are probably the best sources, but there are many government and private sources of indices as well.

The appraiser may want to segregate the cost data into "hard cost" and "soft cost." Depending on the battery limits of the plant being appraised, the "hard costs" typically represent the cost of the machinery delivered to the site and installed by the contractor. Typical "soft costs" may include internal engineering and design, construction supervision costs, and possibly capitalized interests. Depending on the complexity of the process, these soft costs could be an additional 10% to 20% (or higher) of the hard costs.

It is important to segregate these costs along with freight and installation, if the premise of value is for removal. Although these costs may be rare exceptions, they typically do not translate into value to a purchaser of the machinery for removal under either fair market or liquidation scenarios.

Market Data Research

If the appraisal is to determine fair market value for continued use, sales of complete mills should be found and analyzed. Critical comparable market data might be tons per day, tons per year, board feet per year, and the like. If this data can be obtained along with selling prices, further adjustments can be made for real property, effective ages of both the subject and the comparable properties, capacities, and the intangible assets sold, if any.

Specific machinery sales data should be obtained. Offering prices, private party sales, auction sales—these can all be used, and should be sought out, when providing a fair market appraisal. As with complete facility sales, this data need to be analyzed and adjusted to the subject before arriving at an opinion of value. Industry specific sources would include trade magazines (often offerings are included here), catalogs, used machinery dealers, auctioneers, and even the subject company. Remember, our ethics does not preclude us from utilizing our client's own data when arriving at conclusions of value.

A company like Northwest Pulp and Paper, which specializes in paper and pulp machinery, would probably be a good source for used values of paper machinery. Panel Equipment Sales, Inc. (PES) in Portland provides a catalog of asking prices for veneer, plywood, and board plant equipment. Gene Loughridge and Associates, Monroe, Michigan, supplies good data for used corrugating machinery. The appraiser should search as many sources as needed to properly complete the assignment.

Income/Operating Data Research

If the appraisal assignment calls for market value for continued use, the company income of operating data may be analyzed and compared to industry averages. Paul F. Ehinger and Associates or Resources Information Systems, along with more traditional sources, like Robert Morris Associates' Annual Statement Studies, provide specific industry operating data. The appraiser can then compare the subject company's data to that of the industry to assist in the valuation. If the company is performing below the industry averages, it could be the result of the machinery. Further investigation is required.

As an example, in the case of a paper sheet converting plant utilizing obsolete machinery, excess operating cost should be evident when compared to the industry operating cost averages. A Lenox sheeter that was the industry standard in the 1970s operates at 500 to 600 feet per minute. The ECH WILL sheeter, operating at 1,100 feet per minute, can produce as much product at a lower cost, primarily in terms of labor and facility upkeep costs. A plant operating with obsolete technology will usually exhibit higher than average operating costs.

Of course, there is a valid reason for this research. The data is a vital part of the appraisal process. Once the data is collected, it needs to be analyzed.

ANALYSIS AND CONCLUSION

The third part of the appraisal process is the actual appraisal analysis. Once the property has been properly identified and sufficient data has been obtained, the appraiser analyzes this data. USPAP requires three approaches to value; cost, market, and income approaches. The appraiser, utilizing the data and the proper approaches, should be able to properly conclude value.

This brings us to the fourth part of the appraisal process. No appraisal is complete without a proper value conclusion. If the property is well identified, data is properly gathered, and the appraisal analysis properly carried out, then the conclusion should be self-evident. Part of the conclusion of the appraisal process is the actual report production. A good report properly sets forth the appraisal process for the reader and should lead the reader to the same conclusion as the appraiser. And, of course, the appraisal needs to comply with all USPAP standards.

The subject of the analysis (including all three approaches to value) and the conclusions (including report production and USPAP requirements) are too immense to be covered here. It is a subject for another presentation.

SUMMARY

In summary, this presentation was not meant to be a complete instruction in appraisal methodology in 4,000 words or less. It was simply intended to provide you with some of the basic appraisal techniques and illustrate how they might apply to appraisals in the wood products industry. Experts in the industry have written prior to this presentation, and experts will write following it. The key to a good appraisal is the consistent use of the proper methods and techniques coupled with expertise in the specific assets being appraised.

Hopefully, the approach to the appraisal process set forth in this presentation, including some of the techniques outlined in the "Identification," "Data Research," "Analysis," and "Conclusions" sections will assist all appraisers in estimating value for wood products machinery and equipment.

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Companies

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MEASURING TANGIBLE ASSET SERVICE LIFE

By Richard K. Ellsworth, ASA

A fundamental element in tangible asset appraisal is the estimation of expected service life. Service life considerations impact the appraisal process when utilizing the market approach, the income approach and the cost approach. In the cost approach service life influences the annual depreciation rate of an asset as an asset possessing a longer service life will generally experience a decline in value that is proportionally smaller than a shorter lived asset over the same time period. With the income approach the length of time that an asset will continue to generate income is a function of its service life. An asset with a shorter remaining service life will generally be worth less than an asset with a longer life all else being equal since fewer cash flows will be produced by the shorter lived asset resulting in a lower value. Service life impacts the market approach in that the purchase price of an asset is dependent on its remaining service life. An investor will pay more for an asset with a long expected remaining service life relative to the same asset with a short expected remaining service life. Since service life is a consideration with each of the three valuation approaches, the estimation of asset life characteristics are an important consideration in the appraisal process.

Tangible asset service life information can be obtained from two alternative methods which can be utilized either individually or in combination with each other. The first method is to consult previously published sources to gather information concerning useful life. The second method is to compile data concerning the asset type and conduct an actuarial analysis of the information to calculate a service life.

There are several publications that present information pertaining to the useful life of various assets including Iowa State University Bulletin 125 "Statistical Analyses of Industrial Property Retirements," Internal Revenue Service Bulletin F, and Marshall & Swift's Marshall Valuation Service. Although these publications present information concerning the useful life of a wide variety of tangible asset categories there are several potential shortcomings to the information contained in these publications. Both Bulletin F and Bulletin 125 were published over fifty years ago so that extrapolating the results from these studies may be inappropriate for assets today given changes in usage, materials, and design. With Bulletin F and Marshall Valuation Service it is difficult, if not impossible, to ascertain the quality of the information or the basis used to establish the life characteristics. The useful lives presented in these sources may be the result of a statistical analysis of retirement experience or it may represent a compilation of industry opinion without statistical support. Despite these shortcomings, these sources provide some indication as to life characteristics if other information is unavailable.

An actuarial statistical analysis has the ability to overcome the shortcomings of the published sources of service life information concerning tangible assets. Generally most lifing information will be current and the quality of the data can be ascertained during discussions with management and the actual statistical analysis process. The major hurdle

to the actuarial retirement rate method is the availability of the necessary information to perform the statistical analysis.

To establish tangible asset life characteristics historical information must be gathered concerning active and retired units for the asset type under consideration. For assets actively in service the original installation date is required whereas with retired assets the installation date and the retirement date are required to calculate an assets service life. After gathering the active and retired unit information, the data is compiled in a tabular format. An actuarial lifing analysis using the retirement rate method can then be performed to estimate asset life characteristics.

The retirement rate method establishes an asset retirement pattern which is compiled in a survival table. The survival table depicts the relationship between an asset population's age and the expected survival percentage from the subject population. The relationship between percent surviving and age is referred to as the survivor curve. After the asset population survivor curve is constructed, it is compared to various survivor curve models to calculate service life characteristics. The average service life is equal to the area under the survivor curve. The comparison process between the observed data and the survivor curve models smoothes the observed data and extends the observed survivor curve if it fails to extend to zero percent surviving.

The average useful life for an asset is calculated by statistically comparing the observed survivor curve with the survivor curve models. The survival curve model which minimizes the squared differences between the observed survivor curve and the survivor curve models is the survivor curve which best describes the survival process and the life characteristics of the population. The minimum squared differences survivor curve model is utilized as the descriptor of the population life characteristics.

Survivor Curve Models

The compilation of survivor curves for physical property originated in the early 1900s. These early survivor curve analyses have evolved into sophisticated actuarial service life analyses which have become an established practice in industry. Probably the most widely recognized survivor curves in the appraisal industry are the Iowa curves developed by Edwin B. Kurtz in the 1930s at what is now known as Iowa State University. The Iowa curves were created from the study of 176 property types and resulted in the classification of 18 Iowa type curves. The Iowa curves were classified according to three curve types: six left moded L curves, five right moded R curves, and seven symmetrical moded S curves. Left-modal curves describe life characteristics whereby the greatest retirement frequency occurs prior to the average service life. Right modal curves exhibit their greatest retirement frequency after the average service life has been achieved. With symmetrical modal curves the greatest retirement frequency occurs at the average service life. The results of the Iowa State studies were published in Bulletin 125 "Statistical Analysis of Industrial Property Retirements." Bulletin 125 was updated in 1967 to include an additional curve type, the origin moded O curve. The Iowa type curves are used to estimate life characteristics for various types of assets.

In addition to the traditional Iowa curves, tangible asset survival behavior can be described utilizing the Weibull distribution. The Weibull distribution is a two parameter survival model which relies upon the shape and scale parameters to describe survival behavior. By changing the shape and scale parameters, the Weibull distribution is capable of modeling a wide variety of survival patterns.

Illustrative Example of Survivor Curve Analysis

The primary limitation in performing an analysis concerning tangible asset service life is the availability of reasonable historical information. The service life analysis of electric generating power plants is a convenient example since information is available for active and retired power plants. With the installation and retirement date information the retirement rate method of actuarial analysis can be performed to establish service life characteristics for electrical power plants.

To determine the appropriate survivor curve, the actuarial technique known as the retirement rate method is utilized to construct an observed survivor curve. To implement the retirement rate method, active and retired assets must first be tabulated. The installation and retirement dates for retired assets and the installation date for active assets are required in order to perform the retirement rate analysis. With the installation and retirement information the assets can be grouped into vintage age groups and the number of exposed to retirement as well as the number that actually retired per age group can be determined. With the vintage age group information, a retirement rate for each vintage age group can be determined. From the retirement rate information an observed survivor curve delineating the percent surviving at each age can be constructed.

Table 1 illustrates the analytical process associated with the construction of a survivor curve for an asset population. In Table 1 the vintage age distribution of an asset population is presented as well as the retirements from each age group. Dividing the units retired by the units exposed to retirement for each age group produces the individual vintage age group retirement rates. From the individual retirement rates the observed survivor curve for the subject population can be constructed.

The technique utilized to identify the appropriate survivor curve model is to compare the observed survivor curve to mathematical models describing survival activity. Survivor curve comparison is accomplished by performing a least squares analysis between the observed survivor curve and the mathematical survival models. The mathematical survival model which minimizes the squared differences between itself and the observed survivor curve is the survivor curve model which best describes the observed survivor data. The selected mathematical survival model smoothes the data derived survivor curve and extends the survivor curve to estimate the age of last retirement for the population.

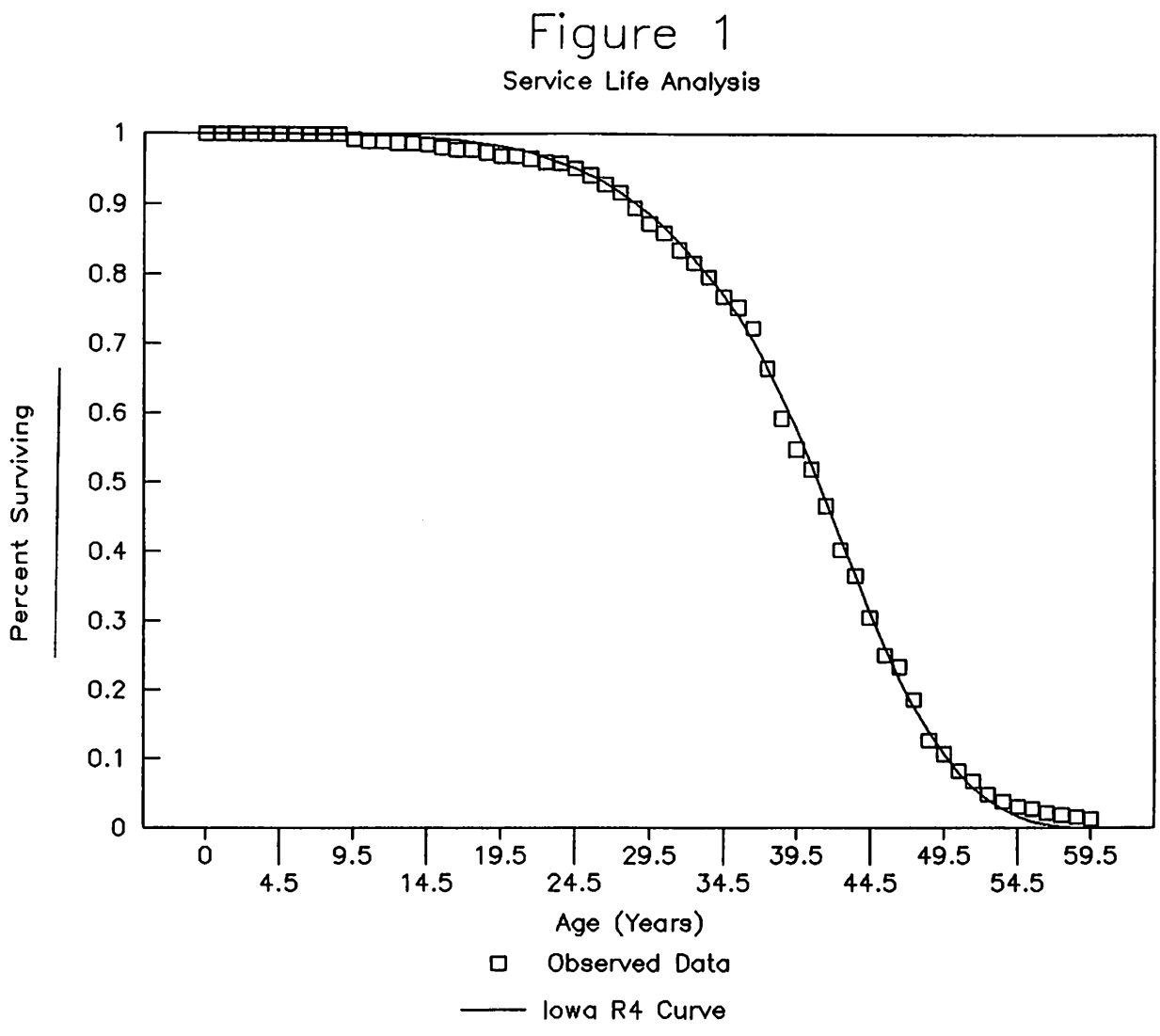
Table 1
Coal Fired Power Plants — Retirement Rate Method

Age	Units Exposed to Retirement	Units Retired	Percent Surviving
0-0	266	0	100.00
0-1	293	0	100.00
1-2	308	0	100.00
2-3	323	0	100.00
3-4	340	0	100.00
4-5	356	0	100.00
5-6	379	0	100.00
6-7	388	0	100.00
7-8	384	0	100.00
8-9	381	3	100.00
9-10	386	1	99.21
10-11	380	0	98.96
11-12	390	1	98.96
12-13	399	0	98.70
13-14	420	1	98.70
14-15	452	2	98.47
15-16	469	1	98.03
16-17	487	0	97.82
17-18	481	2	97.82
18-19	504	3	97.42
19-20	539	0	96.83
20-21	556	2	96.83
21-22	572	3	96.48
22-23	593	1	95.98
23-24	615	5	95.82
24-25	639	6	95.04
25-26	651	9	94.15
26-27	633	8	92.85
27-28	606	14	91.67
28-29	565	14	89.56
29-30	513	8	87.34
30-31	472	13	85.97
31-32	440	10	83.61
32-33	424	11	81.71
33-34	375	13	79.59
34-35	306	6	76.83
35-36	271	11	75.32
36-37	226	18	72.26
37-38	175	19	66.51
38-39	135	10	59.29
39-40	94	5	54.90
40-41	78	8	51.98
41-42	65	9	46.64
42-43	66	6	40.19
43-44	67	11	36.53
44-45	62	11	30.54
45-46	58	4	25.12
46-47	63	13	23.39
47-48	62	20	8.56
48-49	57	9	12.57
49-50	61	14	10.59

Table 1 continued

Age	Units Exposed to Retirement	Units Retired	Percent Surviving
50-51	49	9	8.16
51-52	41	12	6.66
52-53	34	7	4.71
53-54	27	5	3.74
54-55	29	3	3.05
55-56	29	6	2.73
56-57	25	4	2.17
57-58	21	4	1.82
58-59	15	2	1.47
59-60	12	2	1.28

Figure 1



Statistical comparison of the observed survivor curve information in Table 1 indicates that an Iowa R4 curve with a 40 year average life is the mathematical survival model which best describes the asset population. Figure 1 graphically presents the least squares curve fitting process. The coal fired electrical generating facility 40 year average life conclusion compares with a 31 year life for electric utility plants in Bulletin F and a range of 23 to 34 years for electric generating facilities in Marshall and Swift. The statistical analysis of coal fired electrical generating facilities indicates a longer life than the lives indicated in Bulletin F and Marshall and Swift.

Conclusion

Service life considerations impact the tangible asset appraisal process. Service life information is available through published sources such as Bulletin 125, Bulletin F, and Marshall & Swift however the life information presented in these publications is subject to some shortcomings. The statistical analysis of tangible assets through a retirement rate analysis enables the appraiser to establish more accurate service life expectations thus improving the appraisal process.

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FAIR MARKET VALUE - IN CONTINUED USE
vs:
INSTALLED

by Robert B. Podwalny, ASA

For some time now I have been wrestling with the differences between these two concepts and what they mean for the MTV appraiser. The first question is: what is the difference between them? The second question is: are we, as appraisers, misleading the user of our services by having both as they are currently defined?

Fair Market Value - In Continued Use (as defined) is the estimated amount in terms of money that may reasonably be expected for a property in exchange between a willing buyer and a willing seller with equity to both, neither under any compulsion to buy or sell and both fully aware of all relevant facts and including installation and assuming that the earnings support the value reported.

Fair Market Value - Installed (as defined) is the estimated amount of an installed property expressed in terms of money that may reasonably be expected in exchange between a willing buyer and a willing seller with equity to both, neither under any compulsion to buy or sell and both fully aware of all relevant facts with the added assumption that the equipment is installed and is intended to remain that way.

When you read the above definitions they seem to say the same thing. The only real difference is that in the In Continued Use concept there is a "big cop-out" in that the appraiser assumes that the earnings will support the value conclusion. But by just saying that the appraiser assumes that the earnings support the value conclusion is a statement without meaning. It is like saying that the appraiser assumes there is a market when no attempt has been made to determine if a market exists. The courts are becoming less willing to accept the "it is assumed that the earnings will support the value conclusion" unless there is some indication that the appraiser has considered the current or project earnings to some extent.

Under both concepts the equipment being appraised is installed and the appraiser has recognized the added value that the some or all the soft costs associated with the procurement and installation have been considered. The appraiser has also taken the costs incurred by the company and has converted them to a value.

Did I say converted cost to value?

Yes I did! All too often appraisers do not recognize the difference between cost and value. Cost is what one pays for an item and value is its worth. A confusion between these two terms adds to the problem because some appraisers loose perspective of what they are doing.

One of the problems is that there are two schools of thought about how to deal with installation costs. One school takes the position that the installation costs should not depreciate because they would be about the same if installing used or new equipment and that in some instances the connections would remain when the equipment item is replaced. The other school of thought is that all the installation costs should take on the same percentage good factor as the equipment it supports. Both have merit in given situations.

For insurance purposes, depending on the policy, I could see that the installation costs would not depreciate since the purpose of the appraisal is to make the insured whole should a loss occur. In such a case, generally, the cost to acquire comparable used equipment would be less than a new one. But the cost of installation would the same and therefore you would probably not depreciate the installation costs. The argument in this case would hold true because the costs of installation would be the same regardless if the equipment is new or used. The concept of this type of valuation is to make sure that the insured is covered sufficiently to put him back into business after the loss.

When doing an appraisal for Fair Market Value - Installed, the equipment is installed and the appraiser should be looking at the value of the installation and not the cost of installation. By this I mean that the installation has been made at a point in the past, therefore, theoretically, would not have the same remaining life as a new installation, thus it should have less value. The installation cost should be depreciated to reflect the difference between a new installation and an older one. One way to make the adjustment is to estimate the remaining useful life of the installation to determine the remaining good factor of it. Then adjust the installation accordingly. I think handling the installation cost this way is more equitable than taking the same percentage good factor of the equipment it supports.

The other way is to take on the same percentage good factor as the equipment and use that as the factor to determine the value of the installation. Making a determination of percentage good this way, I think may distort the value.

For example lets take a look at this problem the two different ways. For sake of argument lets assume that the Fair Market Value - In Exchange of this item is $10,000. This is supported by both the cost and market approaches. The cost new of this equipment is $100,000. The total cost to install the equipment is $15,000. It has been determined that the equipment has a normal useful life of 10 years. In doing your analysis you have determined that the equipment being appraised has a remaining useful life of about 4 years. In doing the valuation using the concept that the installation costs take on the same percentage good factor as the equipment it supports, you would determine the equipment's percentage good is ten percent based on cost new. Therefore you would only recognize ten percent of the installation cost or about $150. The total installed value would be $10,150.

On the other hand if you accepted the philosophy that the installation costs should be in concert with the remaining useful life of the equipment it supports, you would recognize 40% of the installation cost or $6000 since the equipment is estimated to have 40% of its normal useful life remaining. The total installed value would be $16,000.

Some may argue that the property should be value still another way. That mainly being based on the age life analysis. In the above example, using the cost approach, the total cost new installed would be $115,000 and that it was determined the equipment was estimated to have a remaining useful life of 4 years of a total useful life of 10 years, you would apply the 40% good factor to arrive at a value of $46,000.

It is my opinion that the second approach will provide the most appropriate value conclusion. This is because the appraiser has used the current market to establish the basis of value for the machine itself. By using only the cost approach it is difficult to properly measure the amount of depreciation that may exist especially economic obsolescence. By using the market the equipment already takes into account certain forms of depreciation.

In doing an appraisal under the concept of Fair Market Value - Installed, this may be sufficient assuming that the market comparables used do not need to be adjusted for condition. This means that the comparable were identical in age, function and condition as the machine being appraised.

However, if the appraisal is for Fair Market Value - In Continued Use, the appraiser must do at least a financial overlay to determine that the earnings support that kind of investment. I understand that if you are doing only one machine unit out of many other machines, it is almost impossible to determine the contribution to earnings the machine produces. But the definition for Fair Market Value - In Continued Use carries the connotation that the machine is contributing in a positive way to the earnings though this may not be the case.

In the last few years I have noticed and have heard from MTV appraisers that the courts are not as willing to accept the concept of Fair Market Value - In Continued Use unless a financial analysis has not been done. But at the same time they have accepted the term of Fair Market Value - Installed because an appraiser can demonstrate how the value was arrived at without including a big leap of faith of "assumed earnings".

This is an issue that faces all MTV appraisers and should be discussed. The purpose of this paper is to bring this issue up as food for though and for future discussion. If anyone has different opinions, I would like to hear them and potentially that could become a basis for a future seminar.

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APPRAISERS FOR LENDERS

PART I OF III

By Jackie L. Montalvo, ASA

Adapted from a thesis paper written for the Valuation Science Degree Program at Lindenwood College, St. Charles, Missouri by Jackie L. Montalvo.

When contracting an appraisal firm, there are questions that should be asked of the firm as well as directed to the staff appraisers. If an appraiser is independent he may follow his own policies and procedures regarding appraisals whereas, the staff appraiser is obligated to follow all rules and regulations set forth by his employer. It is important to know the background of the appraiser or appraisers assigned to a project, as their expertise may be within a different industry and/or may not be to the level necessary for the project in question. This is especially true regarding machinery and equipment, as the individual's training process requires years to reach the level of what some firms term as "Senior Appraiser."

Being a senior appraiser, project leader, or engagement appraiser for an appraisal assignment requires a level of knowledge and experience that, until recently, was gained primarily from on-the-job training, as no formal education or degree was available. Although great strides have been made in the appraisal profession regarding formal education, practical knowledge and on the job experience is a necessary part of appraising machinery and equipment and is not something that can be gained solely from books. Laying the basic groundwork for the beginning appraiser is, as in any profession, crucial to his future success. To become a professional golfer, for example, it is necessary to begin formal training before any bad habits have been formed. Mastering the game of golf takes hours of practice everyday; if practice is not continually ongoing, the level of present capability will not be maintained or improved. Success in any field requires drive, dedication, desire, and a willingness to learn.

An individual desiring to become a competent machinery and equipment appraiser, like the golfer, cannot be quickly attained. Proper training requires that certain steps be followed in a progressive order:

1. The first step of training could be working in sales, marketing, research or as a *market analyst* to familiarize him with nomenclature used within the appraisal profession regarding machinery and equipment and the related value concept meanings. Working in this area requires contact with manufacturers, competitors, dealers, and the general public for gathering required information. This exposure will enhance his communication skills, as well as broaden his knowledge of the appraisal profession.

2. The next step of training would be as an *appraiser trainee*, which also involves market analyst work but includes "on-the-job" training listing basic peripheral equipment such as office furniture and business machines, small hand tools (powered and manual), material handling, and miscellaneous plant furniture such as ladders, bins, baskets, and workbenches. This step of training will give exposure to the method of listing an appraisal whether it be by the dictation or written method, teach how to describe an item properly, and expose him to the use and general application of the various value concepts, all of which will enable him to become value oriented.

3. When he is able to accomplish listing basic peripherals, an appraiser trainee will then progress to the level of *junior appraiser*. The *junior appraiser* should be able to list minor equipment such as computers, forklifts, drill presses, bench and pedestal grinders, cutoff saws, and other common equipment found in most any manufacturing plant. To accomplish this requires constant exposure to these various industries for him to be able to gain recognition and properly describe these items. The ability to properly describe equipment is an art which is obtained before there is the capability of placing values, understanding the various value concepts and their meanings, and then applying these concepts to equipment.

4. Once value understanding is accomplished, the individual will have reached the level of *appraiser* and will begin training under the direction of a "senior appraiser," describing and placing values on major equipment. At this level, the appraiser is taught to handle certain aspects of the job that allows direct communication with the client. This is very important as communication is an art developed through experience and is typically the last step in the training process before becoming a "senior appraiser."

5. A *senior appraiser* has the ability to handle all aspects of a job from initial contact with a client, quoting the job, performing the appraisal, producing the bound formal report, and collecting the fee. This is not to say that a *senior appraiser* has total knowledge of all industries, but has the ability to find information and the wherewithal to seek the expertise of others, when needed. It takes approximately five years from the initial step of "market analyst" to becoming a *senior appraiser* in the machinery and equipment profession.

Although these levels of expertise have been labeled *Market Analyst, Appraiser Trainee, Junior Appraiser, Appraiser, and Senior Appraiser,* these labels are merely terms and may vary with each company, but the order of training defined under each level should be followed to obtain the top goal of this profession. **"In any appraisal organization, there must be a consistent and standard approach in the conduct of an appraisal....By the same token, a training program should be presented that is consistent and standard in its approach and flexible enough to fit in with the needs of the work to be done."**[1]

It is possible for an appraiser to be limited in his ability due to his area of expertise; for this reason it is important to know, when looking at an appraiser's qualifications, if he is disciplined in a specialized area. **"Too often, men who are well qualified in one particular field will take the liberty of stretching their competence into another completely unrelated field."**[2] An individual who has been practicing the profession of appraising for twenty years and specializing in an industry such as medical equipment, may require assistance to properly perform an appraisal in industries such as metal equipment, wood equipment, plastic equipment, chemical equipment, food processing equipment, and paper mills, as his knowledge may not relate to those industries.

To remain current within the appraisal profession, an appraiser should continue his education as well as educate the user of his reports (the client.) This can be done by attending, providing and participating in seminars, which allow both parties the opportunity to clarify any past problems or confusion. Individualized seminars could also be made available by the appraiser as they would provide a method of contact with the client on a more personal basis. Newsletters, quarterly and/or yearly publications, is another way of providing client education and can also be used as educational tools for individual and group in-house training sessions. Communication through education stimulates new ideas which in turn could cause procedural alterations to better fit the client's needs.

As a lender appraiser, it is essential that applicable areas of the law be understood; therefore, maintaining a membership in such organizations as the American Bankruptcy Institute (ABI) or the National Association of Bankruptcy Trustees (NABT), subscribing to certain legal publications, or being a member of other organizations not necessarily connected with the appraisal profession such as the Society of Petroleum Engineers International Association of Drilling Contractors (IADC) or other professional groups related to specific industries; their information on economics that affect equipment, would be beneficial.

There are many existing appraisal firms, with more being formed every day; this is also true of appraisal societies. Data from the College of Fellows of the American Society of Appraisers has noted, **"Five major nationwide testing/certifying appraisal societies, and an additional 20 (c) national, regional and local groups, represent some 30,000 appraisers of whom perhaps 13,000 have been designated as a result of examination procedures."**[3] Becoming a member of these societies gives an appraiser the ability and opportunity to achieve senior certification and/or designation in the appraisal profession; however, added credentials do not necessarily make a qualified appraiser.

The *MAI* designation relates to fair market value of real estate and, at this time, does not encompass the appraisal of machinery and equipment. This well known designation, which typically takes years to obtain, adds a high degree of credibility and professionalism to the appraiser due to the stringent experience, testing, and educational requirements. The American Society of Appraisers has similar requirements and was the first multi-disciplinary

society in which senior members may be multiple or single disciplined using the senior designation *ASA* after their name. Some of the basic eligibility requirements for this designation are:

1. a college degree or equivalent;
2. five years appraisal experience;
3. personal investigation;
4. oral and written tests;
5. meeting attendance requirements; and
6. recertification every five years.

The American Society of Appraisers, as well as other societies, requires recertification, sometimes by a point system, in an attempt to assure continuing education. This can be accomplished by meeting attendance, educational participation, authorship, and service requirements within the various segments of the organization or its chapters. For an individual to be a member of the Association of Machinery and Equipment Appraisers (AMEA), he is required to be employed by a firm that has been a member of the Machinery Dealers National Association (MDNA) for a minimum of five years. Comparatively, AMEA is a relatively new organization that refers to machinery and equipment as its only discipline and is now a testing and recertification society. However, the AMEA is a well respected organization.

Having more than one appraisal designation may indicate that the appraiser is a professional who wishes to emphasize his professionalism by the use of designations and/or memberships in the appraisal societies. Designations and memberships provide educational opportunities through courses and publications, lend credibility in areas such as court testimony, presentations before peers, and appraisal reports. However, the mere use of designations does not automatically confer equal competence to all appraisers who hold these credentials. It is possible to obtain an excellent appraisal from an appraiser who is not designated, but extremely knowledgeable under the concept of value applied to the equipment, inventory, or real estate being appraised. In the book *Engineering Valuation and Depreciation*, by Anson Marston it is stated that, **"Whether or not an appraisal is a complete valuation problem need not be of concern to the appraiser. It is necessary only that he know what he is doing and why and that he recognize a true valuation problem when he encounters it."**[4] It is also possible to have an appraiser with the most prestigious credentials obtainable provide an appraisal report that would be considered improper by many societies and individual appraisers. It is easy to understand that everyone with a driver's license is not necessarily a good driver and most, in all probability, not capable of driving in the "Indianapolis 500." There are varying degrees of capability in obtaining any type of license just as there are differences in appraisers, regardless of age, experience, or designations.

It is possible to have appraisers at different levels of capability within a very credible appraisal firm. There can be an even greater disparity between appraisers within the same valuation society. Naturally, the societies do their best to have appraisers maintain consistency, value accuracy, and fiduciary responsibility, but cannot monitor the formal

report which, in most instances, is held in confidence. Therefore, it should not be assumed that a designated appraiser is going to practice the methods and standards of valuation for which the society stands. There are many organizations that issue credentials, which in lieu of testing requirements have stringent experience requirements, yet the validity of those requirements are not checked. This does not mean that such organizations are not worthy of membership, but could cause the basic knowledge of the existing members to be questioned (if this laxness in attitude were known).

Many appraisers have designations after their names representing various disciplines, and, although these designations may not be suitable for the appraisal study in question, they are sometimes used like standard signatures. If these types of credentials are impressive to the client, it would be wise for him to check the designation's meaning, testing criteria, the organizational body itself, and the discipline to which these credentials pertain. The M.A.I. designation is very prestigious; however, as stated in Valuation, December, 1984 **"...perhaps ninety percent of all appraisal work in the United States is done by professionals other than M.A.I.'s."**[5]

It is improper for an appraiser to use a designation after his name if he does not hold senior status in that particular organization and also improper for an appraiser to take a society's initials and use them as a senior designation. An example of this would be if a member of the Machinery Dealers National Association using the initials "MDNA" after his name in an appraisal. "MDNA" is *not* an appraisal designation but rather a society, as is the "AMEA" which has two appraisal designations that differ from the name, "AEA" and "CEA."

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ECONOMIC OBSOLESCENCE

By Leslie H. Miles, Jr.

Appraisers generally understand that there are three forms of depreciation: physical deterioration, functional obsolescence, and economic obsolescence. However, there is some confusion on how one might quantify each of these with special emphasis to economic.

Physical deterioration has been discussed many times and therefore is only recapped in this article. Physical deterioration will use either age/life as generally understood or perhaps an estimated percentage of 100 percent allowing a remaining residual. One must be careful when using age/life or a percentage as it might incorporate, dependent upon the item, a combination of physical and/or functional effect. An example of this would be a computer in which, currently, an estimate might be made of average life 3 to 5 years. There is no question that the physical life should exceed this number, but it is typical that functional obsolescence (technology change) gives an average life shorter than its life physically. In this particular case, the age/life or percentage indicator has, in reality, considered functional obsolescence. There is nothing wrong with this type of application as long as it can be explained and understood by the user when requested. There are many appraisers who do not contemplate this question nor have considered this difference.

Functional obsolescence is typically a comparative to current replacement and/or reproduction in like kind or utility as of the effective date. In many cases, a replacement or reproduction will incorporate newer technology that is estimated in percentage of efficiency. One might estimate this increase in efficiency but, in many cases, a manufacturer can indicate this difference. As an example, a manufacturer of an assembly machine could replace a 5-year old subject but would have a controller that, although cheaper than the one on the subject, increases the efficiency of the machine by 11 percent. This 11 percent has incorporated labor and energy differences, down time, ease of repair, speed and/or accuracy of finished products. With a small amount of investigation on several of the items incorporated in an appraisal or other appraisals, an indirect estimate of percentage for efficiency (a functional difference over time) could be applied to many different subjects. This allows for an excellent explanation of a depreciation breakdown as indications came from a market analysis that would be difficult to argue against other than through like but different information gained from the marketplace.

Economic obsolescence seems to be the most misunderstood and most difficult for appraisers to quantify. In reality, this can be one of the easier quantifiable depreciation factors. The first thing which needs to be understood is that there is more than one form of economic obsolescence. If one is conducting an appraisal for tax allocation, it means that the equipment will be used for the purpose intended. We have already discussed how to figure physical and functional depreciation factors and, therefore, these are applied awaiting economic consideration. The economic depreciation, from Fair Market Value In Place or Continued Use must consider an economic penalty, if applicable. The economic consider-

ation could be a measurement of the industry within the subject is a part of that population. An example of this would be the steel industry which, at the time of this writing, has been effected as much as 30 percent over the years from 1989 to 1992. The following example illustrates one way that this could be measured and supported.

During this three year period measurements of steel industry performance showed a reduction in value. The assets used in the making of steel are, for the most part, special purpose assets the value of which is tied somewhat to the profitability of the steel making industry as a whole.

The value of special purpose assets can vary depending on the specific industry conditions. This has been demonstrated repeated by the fluctuating value of special purpose assets such as oil rigs, railroad boxcars, barges and aircraft. Because of varying supply/ demand circumstances, the values of these special purpose assets generally can rise and fall in direct proportion to the profitability of their respective industries. Accordingly, they know from first hand experience that such special purpose equipment can have a higher value during peak industry periods and lower indicated value under most concepts of value during a down cycle.

	10/02/89	08/12/92	% Change
Bayou Steel	05.3	02.5	-52.9%
Armco, Inc.	12.1	07.1	-40.9%
Bethlehem Steel	20.4	13.0	-36.4%
USX	34.4	25.9	-24.9%
Geneva Steel *	10.0	08.5	-15.0%
Acme Metals	20.1	16.5	-18.0%
Inland Steel	41.1	22.6	-44.9%
Weirton Steel Corp.	14.2	05.4	-62.1%
Wheeling Pittsburgh Steel	15.2	04.8	-68.7%
NUCOR Corp. (Minimill)	58.1	52.8	-09.2%
TOTAL FOR GROUP	230.9	159.0	-31.2%
*Geneva went public 03/27/90.			

There was a company who was appraised by one appraiser at a value on 10/02/89 which fell in value on a reappraisal by another appraiser 08/12/92 by approximately 60 percent. Assuming the two appraisers used the same definition and were both correct, how would you support the difference? Isolating steel mills of approximately the same size as the subject (comparable) and looking at the same dates and related change of stock value, could be an indicator of economic obsolescence. Two which were almost exact comparable to the subject were as follows:

Stock Issuer	10/02/89 Price	08/12/92 Price	% Change
Weirton Steel Corp.	14.2	5.4	-62%
Wheeling Pittsburgh Steel	15.2	4.8	-68%

The price of each company's total common shares is an estimate of the fair market value of each company. No premium adjustment for control blocks were made on either date. **The change in these values at the dates of the two appraisals is an excellent proxy for the expected change in the subject's machinery and equipment values.** As can be seen, the price of these steel company shares decreased by about the same percentage as the appraised value of the machinery and equipment appraisals during the same period.

Declining earnings and the expectation of future poor earnings for the steel making industry as analyzed by the investment community are the primary reasons for the apparent loss in value overall. Naturally, it would be difficult to allocate this kind of information to specific equipment but, for an entire mill, it seems to be one explanation given that all other factors related to value are the same. The decline as shown above is economic.

It should be understood that this high percentage is only used as an example and is not a typical depreciable factor as, when normally found, would vary between 10 and 30 percent. Sometime this economic penalty is an estimate through an investigation of the market and the opinions expressed. Another type of economic depreciation may be considered as an economic overlay provided by a business valuation. This is specific to the subject as a continuing entity as opposed to its peer industries. If one were to consider a continuation without change including business philosophies, management, and the like, a 5-year historical overview with a projection supported by the facts can be very realistic. In an allocation, this continuation may or may not be realistic as ownership is changing with possibly different philosophies, changes in products, marketing strategies and even a management alteration through a specific plan for that change. In the prior case, an owner may wish to indicate the value of an ongoing entity in marketing the business or providing information to investors. In an allocation after purchase, there may be different considerations that may alter the numbers up or down. A company asking for business valuation after bankruptcy may require a more realistic projection in line with a market or industry analysis such as accomplished in a solvency opinion. A company may be acquired to downsize reducing revenues but increasing margins. It is possible that a company which, heretofore, was marginally profitable will be substantially improved by the new ownerships management plan.

Whatever economic overlay is used, it can indicate an economic penalty if that number is less than can be supported by asset valuation whether tangible or intangible as long as measurable. That difference from a business valuation is an economic penalty whereas the measurement from the U.S. or world, for like industries, may share a part of that factor. If it was accurate to say that the steel industry, from all causes, has a 65 percent economic

penalty and a business value overlay of a steel mill showed a 65 percent difference specific to that company, it is possible that the entire penalty comes from the industry itself. If on the other hand, the industry economics shows a 25 percent penalty and the business value 65 percent, it could be said that a part of the business 65 percent is contributed 25 percent from a downturn in that industry. Naturally, it could be concluded that management philosophy or some other internal causes are costing 40 percent of the companies penalty.

In the above, the discussion focused on a measurement of economic to a package sale and was only to indicate the different types of economic penalty. To most of the readers, there may be more interest in measuring the economic penalty to a specific machine rather than to the business. To begin this, let us hypothetically use an example of an engine lathe. In the scheme of things, an engine lathe has many different sub-categories that may or may not fall within the same economic considerations as another. However, for purposes of this example, we will assume that this engine lathe, for measurement of economic depreciation, falls within the same demographics as others in which this economic percentage has been derived. It is obvious that there are not comparables on everything, but an economic obsolescence factor derived from the market itself is the best method for credible application of that percentage. The engine lathe, previous referred to, has a replacement of $25,000.00. By age/life or other methods, the physical depreciation was no more than 10 percent or $2,500.00 (9 years effective age, 10 years average life, equal 10 percent depreciation or 90 percent remaining). The machine depreciated from physical leaves a remaining balance of $22,500.00. This machine additionally was 10 percent inferior to its most current replacement of $25,000.00 shown above. This 10 percent functional (betterment adjustment) is the difference from its newer counterpart from all causes and indicates an amount of $20,250.00 after physical and functional depreciation have been deducted.

A machine, almost identical in age and condition has been sold in the marketplace in or about the time of the need for this measurement at a price of $15,000.00. The question at this point is, why, if we have accurately considered the physical difference and taken away the functional deficiency from its replacement, would it not sell for $20,250.00? Why are these machines, quantifiably selling for $15,000.00 assuming no other adjustments are required? There are many reasons why this could happen such as the user population is in a recession or having hard times, or it is possible that the market simply will not pay any more than $15,000.00 for a machine that would be replaced for $25,000.00 even considering the deficiencies. For whatever reason, that difference between $15,000.00 and $20,250.00 is considered an economic measurement. The economic depreciation for this example is 25.9259 ... or say 26 percent. It should be understood that this is simply a hypothetical example and one approach to measurement of economic obsolescence that is somewhat quantifiable.

In the appraisers judgment, this economic depreciation may not be applicable to all engine lathes, all machine tools, or any particular limit they might wish to set. However, it does demonstrate a measurement in which many other items might be found within that same population, all factors considered. Let us assume that there were other pieces of equipment

that, based upon the appraiser's knowledge, investigation, and belief, should sustain a like economic depreciation. However, there are no comparables on many of the other pieces of equipment. In this particular case, the market approach is not applicable as no comparables were found. However, indirectly, the market is being used as that was the measurement of economic depreciation in the hypothetical example. Assuming everything is correct including the appraiser's opinion of other equipment in the same population, one might consider another machine that has a different replacement cost and then measures the physical depreciation and functional depreciation in a like manner to that already demonstrated. The appraiser now has a quanitifable, formulated, economic depreciation that can now be applied after deducting the other two factors and could feel reasonably confident that his number should reflect a reasonable market for sales if they were to have taken place at that point in time.

There may be all kinds of ways of measuring economic depreciation including one of simple judgment. In today's world, there is sometimes a need to demonstrate and/or explain in some formulated way. In using the $25,000.00 replacement cost of an engine lathe, I am somewhat backing into the economic depreciation as a result of other knowns. I knew the replacement cost as well as the physical depreciation and functional deficiency compared to the replacement cost. It is understood that if a formula is created that 'X' (the unknown) can represent any spot in the formula. In other words, if we knew the market, the economic depreciation, the functional obsolescence, and the physical depreciation, one would be able to find the replacement cost. Naturally, any of the other depreciable factors could be derived if all other items are known. Instead of applying an economic depreciation as a general opinion based upon the marketplace, it is somewhat substantiated or backed-up by using an example.

Leslie H. Miles, ASA is CEO of MB Valuation Services, Inc., in Dallas, Texas and is a qualified instructor of the ME Principles of Valuation Courses. He is a Past Chairman of the M&E Committee and an Emeritus Member of the MTV Committee.

MARKETING PERIOD: WHAT IS REASONABLE?

By H. Denis Neumann, ASA

When we are asked to establish the fair market value for equipment, whether it be a single item or an entire operating facility, how often do we consider the time it might take to actually complete a sale at the value assigned?

In the M & E committee's definition of fair market value, no mention is made of the time it might take to sell the property being appraised. In the real world of buying and selling, establishing a reasonable marketing period in which to sell is imperative; otherwise the market value assigned may not fit the circumstances.

What is "marketing period"? A common definition is the amount of time necessary to expose a property to the open market in order to achieve a sale.

FIRREA regulations for real property appraisers requires an estimate of marketing period, and that this time frame must be supported with market data. USPAP requires that the market value definition consider that a reasonable time is allowed for exposure in the open market. Our M & E definitions for both Orderly and Forced Liquidation Value mention a time period; why not fair market value? If it is not to be mentioned in the definition, some mention should surely be made in the body of the report itself.

We know from personal experience that for items traded in the open market there is almost always a buyer. Vehicles, office furniture, machine tools, etc. are bought and sold with regularity. Assigning a time frame in the report to such items can be relatively simple as the required information can usually be obtained from a dealer or broker of the subject equipment.

The problem lies with those items or operations that are rarely sold in the open market. How valid are our numbers for this type of equipment if we do not consider what a realistic marketing period might be? How well can a bank or other buyer of our services rely on the values assigned if they do not know how long it will take to complete a contract?

"To conclude that the marketing period is either 18 months or two years is to conclude that there is no market, and that therefore a market value does not exist." If the selling price is reduced to the point that a buyer can be found, say in less than 12 months, is this orderly liquidation value, or a realistic market value? The concept of real time is important to support the point that long marketing periods are not compatible with a realistic estimate of market value.

In the fine arts field, the auction establishes market value. In real property, in today's distressed market, "the auction and open bid sales that occur . . . ARE the market, and to conclude otherwise by projecting long marketing times borders on appraiser arrogance, and

is an adventure in attempting to set value, or at the least an exercise in projecting the longer term investment value that a property has for a particular investor."[1]

"What is a rational resolution of the marketing period/market value relationship? The concept of marketing period should drive the definition of market value. Whatever the total period, the definition of market value ought to be stated in the following terms: At what price, and subject to what terms, can this property be sold if the objective is to enter into a contract within the next ____ months? With the time period thus specified, an appraiser is challenged to come up with a value opinion closer to a real-time appraisal and a corresponding analysis that is more useful to clients."[1]

If we are establishing fair market value for items or for a business that is actually going to be bought or sold, a realistic time frame is certainly necessary. Question: Is a time frame also necessary when establishing value-in-use, or lease residual value, or value for tax purposes? When using the cost approach, should a marketing period be included? Undoubtedly, the answer to these questions depends on the reason for the report, and on the buyer of the service.

My point in this article is to ask the reader to reconsider his understanding of market value; that marketing period can be a vital part of the equation and that more energy needs to be spent in establishing both a time frame and a value estimate that will be realistic in today's market.

H. Denis Neumann, ASA, is an emeritus member of the M/TV committee, and a frequent contributor to the newsletter.

[1]Rosenthal, MAI, Stephen A., Marketing Period: A Long Time is the Wrong Time, The Appraisal Journal, April 1993 (Appraisal Institute)

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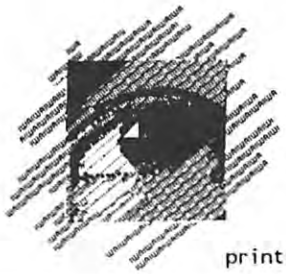

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