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Contents

Damaged Aircraft and Diminution in Value Back-to-Basics

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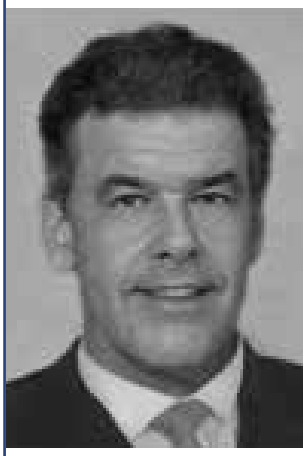

Over the years there has been a little published on the niche subject of appraising damaged aircraft. Even within writings dealing with the broader subject of aircraft appraisals in general, too often the important consideration of how to properly analyze aircraft damage and diminution in value receives brief mention or none at all. This dearth of published knowledge and the lack of industry accepted methodologies for dealing with aircraft damage is unfortunate not only for the aircraft appraiser but also for the appraiser's clients, insurance companies, and the legal system.

Damage diminution appraisal assignments require strong technical knowledge and complete understanding of the various factors that must be considered. There are no cookie-cutter approaches to aircraft damage diminution. In this back-to-basics article I will highlight some of the important concepts, factors, and considerations.

Damage Diminution Claims – Then And Now

When I first became involved in aviation over forty years ago, it seemed that aircraft damage diminutionclaims were the exception rather than the rule. Today, damage diminution proceedings often begin before the paint is dry on the damage repair. In most cases an insurance company, attorney, or the aircraft owner will engage an appraiser to develop an opinion on the diminution in value suffered as a result of the damage.

Diminution In Value Defined

It is commonly accepted that if two aircraft are sitting side-by-side which are identical in every way except that one has a history of damage, the aircraft with damage will command a lower price. This difference in value between a damaged aircraft and an identical undamaged one is referred to as the diminution in value.

Insured Parties Seek Recovery

As an aircraft appraiser, I am often contacted by insurance companies or attorneys representing a client whose aircraft has suffered damage that potentially involves a diminution in value claim. Usually by the time I am contacted, either the aircraft is already at a maintenance facility undergoing the necessary repairs or it has already been fully repaired and returned to an airworthy condition. In most cases the insurance company has either already paid or agreed to pay the repair bill in accordance with the insured's policy. However, most insurance policies written for aircraft hull damage normally do not cover any associated diminution in value (this coverage is available separately). When the insured party realizes it will not be reimbursed for the diminution in value suffered, they begin to explore their options for recovery.

Most Aircraft Damage Occurs On The Ground

Although it might be assumed that damage events only occur to an aircraft while in flight, almost all of the diminution in value cases I have been involved with were aircraft damaged during movement on the ground or when the aircraft was stationary. A majority these cases involved aircraft that were being pulled by ground personnel with tractors (known as "tugs"). The repositioning of aircraft too often results in wingtips hitting hangar doors or other aircraft (especially in crowded hangars), aircraft tails striking overhead obstacles, wings striking light poles, hangar walls, etc. These seemingly minor impacts, even at walking speed can result in serious damage and expensive repairs.

Photo 1. This resulted in a multi-million dollar repair and an aircraft out of service for many months.

Case Example 1

I was involved in a case where a Gulfstream G-IV (a large corporate jet) was being towed to a new parking spot. As it was being towed, the aircraft accidentally became disconnected from the towing tractor. The ground personnel immediately realized this and tried to stop the aircraft, but the taxiway was on a slight downhill incline and the aircraft slowly rolled forward and collided with the tractor that had been pulling it. Although it impacted the tractor at barely 1 MPH, the inertia of the slow moving aircraft on the sharp corners of the tractor resulted in multiple punctures to the fuselage and right wing (see photo 1). The end result was a multi-million dollar repair at the Gulfstream factory and an aircraft that was out of service for many months. I became involved in the case when the aircraft owner made a diminution in value claim against the Fixed Base Operator that was towing the aircraft when the damage occurred.

Diminution In Value Not Formula Driven

While damage to an aircraft is a serious matter it must be approached logically, especially as it relates to diminution in value. Contrary to conventional wisdom, diminution in value from damage cannot be accomplished by simply applying a universal percentage deduction of 10% or 20%, or by looking up a number on a chart; there are too many factors to consider. In fact, The Aircraft Bluebook price guide no longer includes damage deduction charts and instead advises the reader to engage "an experienced appraiser" when assessing the fair market value of a damaged aircraft.

Common Factors Aircraft Appraisers Consider

Just like snowflakes, no two damage events are the exactly the same. However, when determining the amount of value diminution suffered by a damaged aircraft, there are some common factors the appraiser must consider and reconcile. These factors include:

- The type, extent, and cause of the damage.
- The method and quality of repair.
- How long ago the damage occurred.
- How the repair was recorded in the aircraft's maintenance logbooks.
- The sales market for the aircraft type that suffered the damage.

Let's examine these factors further:

Type, Extent, and Cause of Damage: Understanding the type, extent, and cause of damage is the first step in determining the amount (if any) of diminution in value. Aircraft damage can range from a superficial dent in a non-structural area to major damage requiring extensive repair to structural portions of the airframe. Methods used to determine the level of damage are often neither obvious nor clear-cut and can require the review of highly technical repair documents. Engaging an individual with an aircraft maintenance or aeronautical engineering background can be helpful in these situations. In general, the more

invasive the damage and repair, the greater the diminution. Sometimes a little detective work is required to determine the exact cause of damage, especially when a logbook entry is vague or incomplete. In these cases, cross-checking the aircraft in the NTSB aviation database can often assist in providing a clearer picture of the damage history. The cause of the damage can have an effect on the market's perception of the damage itself. Was the aircraft damaged as a result of a publicly reported accident or incident? Were there any associated deaths or serious injuries? Was it a dynamic or static damage event (i.e. was the aircraft moving or stationary)? Determining dynamic or static damage is of utmost importance to insurance companies since aircraft insurance policies are written specifying coverage for either "aircraft in motion" or "aircraft not in motion."

Similarly, helicopter policies are written for either "rotor in motion" or "rotor not in motion." Therefore, an aircraft moving under its own power when a damage event occurs must have "aircraft in motion" coverage or the insurance company will not pay the repair bill. Note: Some aircraft operators opt to self-insure for all or a portion of the hull-damage coverage (e.g. they self-insure the first million dollars of loss). To the aircraft appraiser however, whether aircraft damage was dynamic or static is of lesser importance. In the final analysis, something is always moving when damage occurs and either dynamic or static aircraft can suffer major structural damage (see photo 2). Thus, while the cause of damage must be considered for its effect on market perception, it is far more important for the appraiser to properly assess and analyze *the resulting damage itself.*

Photo 2. Dynamic vs. Static? Whether an aircraft is parked when a hangar roof collapses (as shown here) or whether it is taxiing under its own power when a wingtip strikes an object… **something** is moving when damage occurs. Dynamic vs. Static damage considerations are far more important to insurance companies paying claims than to aircraft appraisers determining diminution in value.

Method and Quality of a Repair: The quality of the repair to a damaged aircraft is the next factor to consider. Was the repair done at a manufacture's repair facility to factory standards using new replacement parts or was it done by a part-time aircraft mechanic working out of a converted delivery truck? I have seen fine work done by independent mechanics, but the market generally places greatest value on a repair done at a manufacturer's repair facility. Note: aircraft maintenance facilities can vary in repair expertise and work quality (see Case Example 2).

When determining the quality of a repair, questions to be asked include:

- Were damaged components repaired, or were they completely removed and replaced with new? Example: If a damaged flight control such as a rudder was completely replaced with new instead of repaired, there is often no diminution in value.
- Is the completed repair externally visible? Examples: Was an area of damaged skin patched or completely replaced? Does the paint on the repaired area perfectly match the rest of the aircraft?
- Was the repair to "factory new standards" or to "field standards?"
- Does the repair require any special recurring inspections related specifically to the repair?

Case Example 2

I appraised a Cessna Citation (a small corporate jet) for diminution in value after its rudder skin had been replaced by a FAA Certificated Repair Station. The repair to the tail was so poorly done that the edges at the bottom of the rudder skin did not align perfectly (see photo 3). Furthermore, the paint on the repaired areas was mismatched. This is unacceptable and resulted in an increased diminution in value.

Photo 3. Sometimes repair quality is measured in millimeters.

How Long Ago the Damage Occurred: As a general rule, the more recent the damage the greater the effect on diminution. As an aircraft damage repair ages it becomes "seasoned." The longer that time elapses after a repair, the less impact it has on value. Eventually with the passage of enough time, certain types of damage history no longer have a material effect on value.

How the Damage Repair was Recorded in the Maintenance Records: The Federal Aviation Administration (FAA) is the agency in the United States that regulates all matters related to civil aviation. This regulatory power includes mandating the requirements for recording the repair of aircraft damage. How damage repair was recorded in the maintenance records can have a significant effect on the amount of value diminution. For example, was FAA 337 Form filed? A 337 Form is a "Major Repair & Alteration Form." Once a 337 Form is submitted to the FAA, the aircraft has a permanent public record of a major repair that is easily accessible to a potential buyer. However, while an aircraft mechanic is **required** to submit a 337 Form to the FAA whenever a repair is performed on damage that meets the FAA's criteria of a major repair, a FAA Certificated Repair Station is not required to submit a 337 Form for the same major repair per **FAR 43 Appendix B (b)**. In these instances, cross-checking other sources can often provide additional information about a damage repair that was recorded in an aircraft's maintenance records (see Case Example 3).

Please note that the FAA does *not* define major or minor **damage** to an aircraft. However, the FAA does define a "major repair" in FAR Part 43 that states: "Repairs to the following parts of an airframe and repairs of the following types, involving the strengthening, reinforcing, splicing, and manufacturing of primary structural members or their replacement, when replacement is by fabrication such as riveting or welding, are airframe major repairs." This FAA repair definition is quite broad and is not what an appraiser would want to use as sole justification for a diminution opinion. For example, what is a primary structural member? This is not defined in FAR Part 1 and open to interpretation. Furthermore, it must be reemphasized that the FAA is defining the **repair** and not the damage itself. This is a subtle but important difference. For example, a small bird-strike or light "hangar-rash" might require a "major repair" if the damage occurred on a rib tip. Should a "major repair" of minor damage result in major damage diminution? In most cases it would not (see photo 4). This is but one example of why aircraft appraisers should not solely rely on FAA repair requirements when analyzing damage and the diminution in value. Remember, the FAA is in the airworthiness business, not the valuation business. diminution in value. Appraisers must use their experience, knowledge, and discretion in these cases.

Photo 4. A "Major Repair" and the filing of a 337 Form does not always result in a Major Damage diminution in value. Appraisers must use their experience, knowledge, and discretion in these cases.

Case Example 3

I was appraising a Beechcraft King Air (a twin-engine turboprop) when a particular maintenance entry in the logbook caught my eye. Buried deep in the entry was a line that indicated two skin panels had been replaced and repainted. No reason for these skin replacements was given (nor was that information required) and no 337 Forms had been filed as a FAA Certificated Repair Station had performed the work. All I had were the part numbers of the two skin panels and a rather sparse description of the repair itself. Checking the part numbers with Beechcraft, I learned that the replacement skins were installed on the underside of the aircraft. As I dug into the situation further, I learned that during the same time period, both propellers had been sent in for overhaul and both engines had been removed for inspection. I now surmised this was either a gear-up landing or some type of structural failure. Additional investigation revealed that the nose gear had collapsed after a component failure. I have seen a number of similar situations during my many years of appraising aircraft. In most cases, what was **not** entered into the logbooks often screamed louder to me than what was entered and prompted me to dig deeper.

The Sales Market for the Damaged Aircraft Type: If the current sales market for a particular aircraft type is strong and active, the effect of damage can be mitigated significantly. In fact, in a hot sales market certain types of damage might be completely overlooked as they relate to value. Conversely, in a slow sales market where many aircraft of a particular type are available for purchase, that same damage will become a major negotiating point and have a larger negative effect on value. Additionally, for retrospective appraisals, the diminution analysis must be done in the context of the sales market as it existed in the past on the effective date of the appraisal. Lastly, the marketplace is almost always less accepting of damage on certain classes of aircraft. For example, the stigma of damage is far greater to a corporate jet than it is to a single-engine Cessna trainer aircraft.

Additional Thoughts & Considerations

Damage diminution and helicopters: Helicopters typically don't suffer damage diminution in value. Perhaps it is the more utilitarian nature of helicopters and their mission. These machines are tools rather than magic carpets. Perhaps it is because helicopter owners and operators are a more pragmatic group when it comes to damage. Since in reality, post-damage repair helicopter values usually **increase** as damaged components with usage limits on their service lives are replaced with new or overhauled components.

Damage diminution and transport category aircraft: Transport category jet aircraft (Boeing & Airbus) that are operated by the airlines are viewed strictly as income producing tools. These high-utilization aircraft usually fly many legs per day with short ground-time turnarounds, often while being serviced by inexperienced ramp personnel. Over decades of operation, it is normal for these aircraft to suffer many dents, dings, patches, doublers, stiffeners, re-skinned and rebuilt areas. Damage events that would give a corporate jet operator major trauma happens regularly to these aircraft without the associated diminution in value.

Damage diminution deals with market perception, not actual airworthiness: The FAA considers an aircraft with damage that has been properly repaired in an acceptable manner to be equally airworthy to an aircraft fresh off the assembly line. Airworthiness in the eyes of the FAA is a black and white issue, an aircraft is either airworthy or it is not. There are no various degrees of airworthiness.

Factor out undamaged high-value components: High value components such as engines can unrealistically skew damage diminution in value. An aircraft that has suffered airframe damage should have the same diminution in value whether it has two brand-new engines or two engines requiring overhaul. The basic concept is to adjust the value of the engines down to their core value when formulating the damage diminution. There are additional factors to consider, but the end result is a value figure that more accurately reflects the true damage to the airframe itself. As a bit of background, it is not uncommon for an aircraft to have many different serial number engines over its operating life. In fact, on larger aircraft, liens are issued separately for the engines that are separate from the airframe lien and the interest in these assets are protected globally through the International Registry (IR).

Expand your team to acquire necessary competency: Before an appraiser gets involved in an assignment that involves a damaged aircraft, it is important to meet the requirements of the USPAP Competency Rule. Damage diminution assignments require specialized technical knowledge. Clients expect their appraiser to be competent in both aircraft valuation and aircraft damage diminution. This is not the time for on-the-job training. If necessary, consider partnering with a more experienced aircraft appraiser or engage the consulting services of a licensed aircraft mechanic or a FAA Designated Engineering Representative (DER).

Conclusion

I have given a broad overview of important factors that an aircraft appraiser must consider when involved in a damage-related diminution in value situation. As a working appraiser I have always found these types of assignments to be both interesting and challenging. Perhaps you will also. Helping my fellow appraisers gain greater understanding of the more subtle aspects of the aviation appraisal discipline is an important part of my professional activities. I hope the reader has benefitted from the concepts and ideas presented.

About the Author

Keith Bransky, ASA, ARM-MTS has been performing aircraft appraisals for the past 24 years. He is president of Jet Appraisal Corporation based in Atlanta, Georgia (www.aircraftappraisal.com), specializing in the appraisal of corporate jet and turboprop aircraft. Keith is a FAA licensed aircraft mechanic and inspector (A&P IA) and an Airline Transport Pilot (ATP) with over 23,000 flight hours. He currently holds ASA office as a Member-At-Large on the MTS Committee. He can be reached by phone at (404) 921-3767 or email at keith@aircraftappraisal.com.

Finding the Right Appraiser is as Easy as ASA

Richard A. Berkemeier, ASA

After the savings and loan crisis in the 1980s, and again in 2008, the banking industry responded with new rules and additional safeguards for better risk management.

One of the most significant changes involves aircraft appraisals.

Prior to 2008, a simple market evaluation by a resale broker, often with just a quick look at the current edition of the Aircraft Blue Book, was sufficient to secure as much as a 90% loan-to-value ratio for a preowned aircraft. That is no longer so.

Today, most banks, leasing companies, and insurance underwriters require that all loan collateral, including business jets, be valued by a qualified, certified appraiser before financing is approved. Those appraisers must comply with the Uniform Standards of Professional Appraisal Practice (USPAP), which was created in 1989 by the Appraisal Foundation, and is the generally accepted standard in Canada and Mexico as well as the United States.

Two organizations provide such appraiser certification: the **International Society of Transport Aircraft Trading (ISTAT)**, which focuses primarily on commercial airliners; and the **American Society of Appraisers (ASA)**, which teaches, tests, and confers credentials to its members, who conduct professional appraisals for business and personal property valuation. The ASA's Machinery and Technical Specialties division offers the only program to train and certify business aircraft appraisers.

Appraisers earn that aircraft specialty accreditation by completing a rigorous curriculum and peer evaluation. ASA (American Society of Appraisers) accredited appraisers must adhere to the professional standards set forth by ASA's Code of Ethics and Principles of Appraisal Practice, and well as USPAP in North America, or the International Valuation Standard elsewhere in the world.

The two levels of ASA – American Society of Appraisers certifications that are available is:

1. **AM - Accredited Member**
2. **ASA - Accredited Senior Appraiser** - which is based on the number of years of appraisal experience, with continuing education courses required to hold either accreditation.

The recent rebound in business jet transaction activity has increased the demand for certified appraisals. To meet that need, two established aviation organizations, Jet Support Services, Inc. (JSSI) (www.jetsupport.com) and Embry-Riddle Aeronautical University (ERAU) (www.erau.edu) co-sponsored and co-hosted two American Society of Appraisers (ASA) accreditation courses earlier this year, one at ERAU's campus in Daytona Beach, Florida, and the other at JSSI's European headquarters in Farnborough, U.K., with more courses planned for this fall.

What does this mean for you, the aircraft owner?

If you are interested in monitoring the value of your aircraft, whether for financing, refinancing, or sale; or to verify hull value for insurance coverage, you will need to have your aircraft appraised by an ASA certified appraiser. This will ensure that you have the most accurate and lender acceptable data available.

On average, expect the appraisal to take about one week, with the physical inspection process usually one full day onsite, and the rest reviewing records and report writing. The appraiser will conduct a systematic inspection of the interior and the exterior of the aircraft, including: engines, airframe, avionics, instrumentation, and other systems; as well as provide a methodical review of your aircraft's flight and maintenance log books, FAA registration, title, and owner's documentation.

Most business jet appraisers avoid "desktop only" appraisals because the inspection and review of the records is extremely important.

In 2015, the average cost for a full appraisal and inspection – required by most lenders – is about $5,000, perhaps up to $7,500, plus expenses. Be aware, however, that a standard appraisal is not the same as a pre-buy inspection for purchase, which can run between $10,000 to $50,000 depending on the size and scope of the work.

Rules for lending have changed dramatically in the past six years. If you have not been in the market recently, know that a proper appraisal will ensure that you secure the right equipment at the right price, while meeting your lender's requirements.

For more information about and to find an accredited Appraiser search the American Society of Appraisers website at www.appraisers.org or call 1-800-272-8258.

About the Author

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