



## Safer Ground Equipment Urged

*Proper maintenance and timely replacement of aircraft support equipment can provide benefits both in safety and economics.*

—  
by

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The polished fuselage of the new jetliner reflects a glint of sunlight as it rolls smoothly up to the terminal gate. The clean-uniformed ground crew swarms efficiently about the aircraft with sparkling service vehicles and equipment painted to match the airliner's livery. Observers in the terminal watch the captain don his gold-braided officer's cap and smartly salute a thrilled youngster watching from the concourse.

This picture of an efficient, smooth — and safe — air carrier flight supported by a well-honed and properly equipped ground service organization is how the industry wants the flying public to perceive it. It is a picture often used in television commercials to reflect how those who carry passengers in the air are responsive to the duty of care to the public. It represents the highest standards to which professional ground and flight crews, and carriers, can strive to attain. Most succeed.

### **Ideal Might Not Be Reality**

However, there is another, less public picture of ground support operations that threaten the safety of some air transportation operations and negatively influences both the direct and indirect costs of doing business. Consider

the following scenario.

A DC-8-63 cargo aircraft taxis to a World War II vintage hangar at a minor cargo hub airport. The hangar has been somewhat modernized to serve as a cargo handling facility and company offices for a generic air freight operation. It is late evening in the winter with an air temperature of  $-2^{\circ}$  C and a wind blowing across the flat airport that adds a wind chill factor to drive the effective temperature to  $-40^{\circ}$  C. The bundled-up ground crew, fighting off frostbite, chocks the wheels and struggles to pull a cold-stiffened ground power cable out of newly fallen snow.

A junior ground crew member is assigned the task of driving an open line tug to bring a set of mobile steps for the flight crew to use while deplaning the aircraft. His destination is a minimally lighted, decades-old assortment of company ground equipment that rarely is lubricated or painted. He surveys a scene that resembles a vintage black-and-white aviation movie of derelict antiques and rusting hulks of questionable operational value.

The cold ground crewman hooks the tug to a suitable-looking, hard-wheeled stairway that looks more like a paint-chipped sculpture of a stork than a crew ladder. He

tows it to the ramp. Eager to regain the comparative warmth of the hangar where his next assignment is to retrieve the cargo carts, he quickly unhooks the stairway from the tug, pushes it to the aircraft's forward door, jabs at the stairway's wheel brakes with his boot and jumps back into the driver's seat of the tug.

Meanwhile, the flight crew members are completing the post-flight checklist and, tired after a long flight and an approach to minimums, are eager to relax with food and sleep before an early morning departure. Their alertness level is beginning to diminish as their duties near an end for the day.

The rest of the ground crew members have completed installing the aircraft tail stand and have rolled the cargo container loader/unloader into place. They check over the cargo manifest while waiting for the junior member to return with the cargo carts.

A van arrives at the mobile stairway to transport the flight crew members who are eager to leave the cooling cabin. The flight engineer unlatches and swings out the aircraft cabin door, and checks the security of the mobile stairway with a shove from his foot. That action is a wise precaution, because the brakes on the stairway wheels do not hold and the apparatus rolls a few inches. He walks to an intercom headset on the far side of the aircraft cabin and notifies the ground crew to return and lock the stairway's wheels. While he is occupied on the intercom, the first officer heads for the door, map case and flight bag in hand, moving quickly to gain the warm refuge of the van. The stage is set for an accident. The first officer steps on the platform at the top of the stairway. It rolls from under his foot and he falls 13 feet to the hard surface below and is seriously injured. As a result, he will eventually become disabled and will be medically retired — to fly no more.

### **Cause Determination Involves Many Considerations**

This scenario is a composite of actual events that have been encountered during insurance claim investigations. It reflects a typical chain of events that often leads to an aircraft accident. Although it did not lead to a major disaster involving large numbers of people, it did lead to a personal — and preventable — disaster for the injured crew member, with consequences not only for him but for the air carrier and the rest of the industry.

In the United States, the maintenance and operation of ground equipment is not federally regulated as are the

maintenance and operation of air carrier aircraft; airport ground service vehicles are not necessarily regulated by state motor vehicle laws. Yet, even where there is regulation, there have been abuses and oversights, such as the publicized heavy fines against air carriers that did not accomplish maintenance requirements and structural failures that have resulted from unnoticed effects of age and corrosion. If aircraft can be allowed to deteriorate under a regulated environment, there is an even greater chance that unregulated ground equipment, with its lower priority than aircraft and passengers, might suffer from lack of maintenance priority.

### **Safety and Survival Can Coexist**

In a highly competitive, recessionary worldwide environment, the air carrier industry has not been the only one that has been forced to reduce expenses along priority guidelines while maintaining proper standards of safety and service. Belt-tightening has become a survival response for many businesses, and terms like "Make do with what you have" and "Don't fix it if it's not broken" can influence decisions regarding equipment maintenance. In the case of aviation ground support, there is a good supply of surplus and excess equipment available that invites the temptation to use a piece of equipment until it fails, then put it into reserve and switch to another, still viable piece of apparatus rather than maintain the original one to proper performance and safety standards.

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*The stage is set for an accident.*

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There are some standards for certain types of equipment such as fuelers or waste disposal apparatus. The National Fire Protection Association (NFPA), establishes requirements and codes regarding equipment involved in transporting or pumping combustible and flammable liquids. The Federal Environmental Protection Agency (EPA) establishes rules for the handling and disposal of hazardous waste. Unfortunately, there are no standards for time between overhaul (TBO) of engines, regulations to ensure that hydraulic or pneumatic systems function properly, codes to ensure that brake systems function as designed or regulations to protect individuals who must operate or use ground equipment.

Without strong guidelines, no government inspector will be expected to direct the repair or proper operation of ground support equipment unless it deteriorates to the point of leaking gasoline, diesel fuel, oil or chemical waste on the ramp. This assumption is possible when ground equipment is placed in a low priority category by management or when economic considerations are allowed to dictate reduced maintenance staff levels, ulti-

mately affecting preventive maintenance programs.

Although ground equipment is currently neglected to some degree almost industry-wide, where voluntary comprehensive preventive maintenance programs have existed previously, more regulation is not the answer. The government cannot be expected to effectively police the care and use of aviation ground equipment.

There is, however, a motivation that can be drawn from within the aviation industry to upgrade or modernize existing ground equipment, and to effect comprehensive preventive maintenance programs. The theoretical accident described earlier holds the key. Outdated, poorly maintained and improperly operated equipment can lead to accidents and injuries. Aircraft crew members continue to be injured because of antiquated, poorly maintained and improperly set up crew ladders. Ground personnel have been maimed and even killed by equipment with safety interlocks that did not work properly or were bypassed to keep equipment operating. Even aircraft have been struck and extensively damaged by vehicles that did not function properly, had poor brakes or broken safety stops. All of these things lead to injuries and damage, which translate to insurance losses.

The employees and involved families are not the only ones who suffer from accidents. The company is penalized for allowing an accident environment to exist through increases in its insurance premiums for liability, hull and workers compensation.

### **Preventable Costs Add Up**

The first officer in the example who fell because of an unsecured stairway earned about \$55,000 per year, and he can not fly anymore. His medical bills probably will exceed \$200,000 in addition to a \$500,000 workers' compensation settlement. The resulting lawsuit for negligence on the part of the air cargo operator will easily exceed several million dollars. Then there is the million-dollar loss-of-license insurance policy that will be paid because he cannot pass his flight physical.

The U.S. labor force pays for the government benefits. Loss-of-license benefits will ultimately be paid for by the pilot's peers who collectively buy loss-of-license coverage. The original equipment manufacturer who built the ladder in 1965 most probably will also be named in the lawsuit, as will the manufacturer of the wheels for the ladder whose automatic brakes did not function, were "poorly designed" or did not have automatic brakes to begin with.

A six to ten million dollar total cost for the imaginary accident to the first officer is not out of the question.

### **How To Safeguard Ground Equipment And Personnel**

1. Assign an identification number to each piece of equipment, powered or draw-type (towed).
2. Maintain records to ensure that preventive maintenance and inspections are performed. This process may also afford some protection in case of a liability suit.
3. Install engine-hour meters on each item of powered equipment to ensure that oil change intervals and necessary overhauls are performed.
4. Assign each unit of equipment to a responsible individual who is to perform the daily pre-operation inspection on that unit.
5. Retain daily records of individual equipment checks, whether it is computerized or on simple check sheets.
6. Ensure that safeguards and safety interlocks are never bypassed. This is a clear danger to employees and assets as well as being negligent.
7. If equipment does not operate as it was designed to do when new, red tag it (take out of service), then repair it, or disable and dispose of it.
8. Set interval standards on equipment replacement. The older an item becomes, the more of an accident exposure it represents.

Settlements of this proportion happen frequently, while the causes are clearly preventable. A rethinking of the cost vs. benefits of preventive maintenance, along with planned replacement of equipment at regular intervals may confirm this to be the more economical course of action.

An organization must modernize its aircraft to remain competitive, and \$30 million is not an unusual sum to pay for a new aircraft; it stands to reason that this expensive asset should not be placed in jeopardy by ground equipment. The equipment that serves the aircraft must meet adequate standards of safety and performance or it becomes a weak link in the operator's financial success chain. Because people are at risk, as well as hardware, the need to maintain ground equipment and ensure its proper use takes on an even greater significance.

One important issue that is often overlooked is powered

vs. unpowered ground support equipment. Although engine-driven equipment usually receives some attention, crew ladders, waste handling equipment, baggage, igloo carts, etc., are often neglected until they fail. These items can frequently be the principle contributors to an incident or accident which costs far more than a preventive maintenance program.

Help is available for air transportation operators who would like assistance in instituting a comprehensive preventive maintenance program for ground equipment. There are computer-run programs available for non-aviation equipment that can easily be adapted to an airline environment. A low-cost alternative is the use of equipment status boards and individual equipment records if absolute economy is dictated.

Now is the appropriate time to rethink the principles of preventive maintenance, and to consider the benefits of replacing obsolete ground equipment before it threatens operational safety and economic viability. ♦

## ***About the Author***

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