

Preventing Falsification of Maintenance Records: The Responsibilities of Technicians, Managers and Corporations

by

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For their own protection, maintenance technicians in the United States should understand what the U.S. Federal Aviation Administration (FAA) and the U.S. Department of Justice consider falsification of records and how the law applies in various situations. Technicians in other countries should review how this issue is handled by their own appropriate agencies.

Criminal indictments against now-defunct Eastern Airlines and several of its maintenance supervisors in New York and Georgia illustrate a growing trend among federal

prosecutors to pursue allegations of wrongdoing that, until recently, were often left to administrative agencies to resolve in the context of their licensing and regulatory authority. While in most cases these criminal laws have been in place for some time, they are being used by prosecutors with increasing frequency.

This trend is reminiscent, in some respects, of the 1980s when the FAA began assessing multimillion-dollar civil penalties against many airlines. Why did the FAA become so aggressive? The industry did not

suddenly forget how to comply with the U.S. Federal Aviation Regulations (FAR), but politicians, labor unions and the news media ultimately pressured the FAA to adopt a strict enforcement policy.

Whether or not one agrees with the policies, the aviation environment has changed, and individual technicians should re-evaluate their own policies and procedures regarding entries in FAA-required logbooks, records and reports.

How Does a Falsification Case Begin?

Although falsification cases can arise in many ways, three scenarios often recur:

- Cases may involve reportable incidents such as inflight engine shutdowns or returns after takeoff. If the incident is maintenance-related, someone will be reviewing the records and interviewing personnel who were involved in performing and supervising maintenance. If it is discovered that certain work steps, or perhaps entire tasks, were never performed but were signed off as having been completed, an investigation of possible falsification may be initiated.

- Cases may involve a disgruntled employee, customer or competitor registering an anonymous “hotline” complaint to the FAA, or by an in-person meeting with FAA personnel. The FAA has even published guidelines governing the granting of immunity to “whistleblowers.” In some cases, these individuals may have been involved in wrongdoing, but are attempting to protect themselves by reporting others. In other cases, a reporter may be trying to sabotage a company’s maintenance operation to advance personal goals. If this happens, a routine investigation can take on menacing overtones toward the reporter.

- Cases may involve the FAA’s use of commonly accepted auditing techniques during a review of completed maintenance records. In some instances, the FAA has compared flight records or logbooks with nonrequired records such as invoices or pay records to disclose inconsistencies in the use of aircraft or air crews. Although there may have been some perfectly reasonable explanations for such differences, the FAA can use and has used record comparisons to show that falsifications have occurred.

Following is a brief explanation of the elements of intentional

falsification and fraud relating to required records under FAR Part 43.12. These elements apply when the FAA is seeking to suspend or to revoke someone's certificate, or to impose civil (rather than criminal) penalties against a company.

For the FAA to establish that intentional falsification has occurred, three elements must be present:

- There must be a false representation;
- The false representation must involve a material (significant) fact; and,
- The false representation must have been made with actual knowledge of its falsity.

The last element, the requirement that the statement be made with actual knowledge of its falsity, distinguishes this type of violation from a typical FAA operational case because it requires proof of intent. Generally, the FAR can be violated without regard to intent. Therefore, the requirement that the FAA prove a person's state of mind in a records falsification case transforms the case into a quasi-criminal proceeding, because intent is almost always required to prove a criminal violation. In addition, the intent requirement distinguishes this conduct from inadvertent or relatively insignificant mistakes

that do not constitute falsification, although they may be grounds for actions for violations of the FAR.

Fraud involves the same three elements as intentional falsification, but also requires two more. These are:

- An intent to deceive; and,
- A reliance by someone on the false representation.

As far as the FAA is concerned, both intentional falsification and fraud can result in revocation of an FAA certificate, including mechanic and repairman certificates. If the FAA believes that records have been falsified, it will usually issue an emergency order of revocation, alleging that both intentional falsification and fraud have occurred. The FAA's use of its emergency authority allows it to revoke a certificate without a prior hearing, which is normally required in a non-emergency case.

Those who make fraudulent or intentionally false entries on maintenance records are most often the ones charged with these offenses. A person who signs for accomplishing the maintenance is most vulnerable if the work was not performed as stated in the logbook or other maintenance records.

The FAA, however, can and will proceed against supervisory

maintenance personnel if it believes a supervisor directed or exerted pressure on a technician to accomplish the work in a manner not authorized by the maintenance manual, Instructions for Continued Airworthiness prepared by the manufacturer or other methods, techniques and practices acceptable to the FAA. Although the supervisor may not have made the false entry himself, he can be prosecuted for intentional falsification or fraud.

Following an investigation of an operational incident, for example, a group of technicians, inspectors and supervisors were charged with intentional falsification when they stated in a maintenance record that a landing gear repair was made in accordance with the manufacturer's maintenance manual when, in fact, it was not. The FAA sought to revoke the certificates of four people, and the U.S. National Transportation Safety Board (NTSB) has affirmed the FAA's decision in two of these cases.

The FAR most often cited in maintenance enforcement actions is Part 43.13, which has two important performance rules. The first rule requires that all repairs be accomplished in accordance with prescribed procedures (such as an aircraft manufacturer's maintenance manual). The second rule states that a repair must return the component or structure to its original or properly altered condition.

An improper repair case typically involves suspension of a technician's certificate for some period but rarely results in revocation of a certificate. Such cases are often accompanied by a separate civil penalty action against the technician's employer.

The distinction between an improper repair and an intentional falsification can be very subtle. For example, a technician evaluating a particular discrepancy is required to follow the air carrier's or aircraft manufacturer's maintenance manual. What happens if the individual fails to take the proper corrective action? The unrepaired aircraft continues to fly in an unairworthy condition. At this point, there is an improper repair case. The technician could face a suspension of his or her certificate and his or her employer could be fined substantially, depending in part on how many flights the aircraft made before the discrepancy was detected.

Now, add another element to the scenario. What if the technician performed a repair but failed to follow the procedures set forth in the manual? Assume also that the technician's entry in the maintenance records stated that the repair was performed in accordance with a particular section of the manual. This could transform an improper repair case into a far more serious case of intentional falsification.

How do the three elements of intentional falsification apply in this scenario?

- Did the technician make a false statement? Yes.
- Was the false statement significant? Yes, the statement was significant and had a tendency to influence the FAA and the owner of the aircraft that the repair had been performed in accordance with the manual.
- Did the technician have actual knowledge of the statement's falsity? We may never know, but we can appreciate the predicament of the technician. If the FAA can show that the technician knew the statement was false when it was made, his or her certificate probably will be revoked.

This only may be the beginning of the technician's troubles. Apart from the fact that falsification of records is also a separate criminal offense under the Federal Aviation Act (carrying a maximum prison term of five years and a substantial fine), several other criminal statutes also may apply in these cases, including conspiracy, obstruction of justice, mail fraud, wire fraud (if computers are involved) and making false statements — all felonies punishable by prison terms and/or fines.

Criminal Liability Often Extends to Management

Under what circumstances can a company or its senior management be in trouble when others far below them in the chain of command falsify records? Under current criminal statutes, surprisingly little is required to indict a company. In some jurisdictions, corporate liability can be based solely on the actions of even low-level management employees. This exposure, termed "derivative liability," can be established without regard to whether the company actively encouraged or condoned the illicit behavior. Although a pattern of illegal conduct is usually required to hold a company responsible, this can sometimes be established through proof of only two such incidents. Senior management, although removed by several levels from the actual incidents of falsification, can be vulnerable.

Criminal prosecutors are usually not knowledgeable about the aviation industry, yet they evaluate conduct that can easily be misinterpreted. For example, it is not unusual for a senior manager to be involved in telephone conferences during which reasons for mechanical delays or cancellations are discussed. In a desire to complete the mission, a senior manager may raise his or her voice or express dis-

may in such a way that a technician might perceive that management wants the airplane out of the hangar and on the line immediately. A technician may interpret the conversation to mean that he should shortcut worksteps or sign off work not performed.

As a manager or supervisor, one should avoid making statements, even in jest, that could be misinterpreted later to suggest that there is more concern about returning the airplane to line operations than properly repairing it. This is especially important during telephone calls when the listener is unable to observe overall demeanor to aid in assessing the speaker's intentions. Refrain from berating someone or shouting at someone because the person was unable to complete a task on time or to your satisfaction. Before saying something, consider how it might sound to an average passenger or to jurors in a courtroom. If in doubt, do not say it.

After an incident, this unintended but perceived intimidation of a subordinate might be interpreted quite differently. In fact, a prosecutor could allege that the senior manager participated in a criminal conspiracy. It may sound far-fetched, but such actions are not without precedent.

To minimize the likelihood of becoming the subject of an investigation, every certificated technician

needs to understand the legal requirements for completing maintenance records. Technicians should receive indoctrination training as well as recurrent training in their duties and responsibilities for maintenance record entries.

The training should cover:

- The legal requirements for completing maintenance records;
- The circumstances under which a person can sign for work accomplished by another;
- The importance of coordination and communication between supervisors and technicians;
- Senior maintenance management's role in supervising and directing maintenance activities and the field technician's obligations under the law; and,
- The consequences of any deviant behavior.

The company's maintenance policy manual should include a discussion of these issues with the limits of acceptable behavior and clear definitions of records falsification. The policy manual should also have a clearly stated disciplinary policy for falsified or negligent record entries.

What if a daily check was signed off, signifying that tire pressures were within limits and an FAA or company auditor happened to check the pressures an hour later and found that they varied significantly from the required reading? Other facts and circumstances might be revealed, but the government could make a strong case that the technician signing for accomplishing the check knew that the tire pressures had not been checked and was therefore guilty of falsifying a record entry.

What to Do If Things Go Wrong

Any suspicious incident or indication of falsified records should be thoroughly investigated by outside counsel, employing standard investigative techniques. Even if the investigation establishes that falsification did occur, at least senior company officials will be able to take whatever actions are necessary, rather than being surprised about the falsification later. When counsel is involved, sensitive documents generated during the investigation can be protected later from disclosure if they constitute an attorney's work product or are confidential attorney-client communications. If counsel was not involved, the documents would not

be considered privileged and therefore would have to be disclosed.

Anyone with knowledge about an alleged falsification should be interviewed. Memoranda recording those interviews should be prepared, records should be reviewed and documented, and additional investigative techniques (such as hand writing analysis) should be employed if necessary. When all the facts have been assembled, a report of the investigation should be prepared by counsel. This will assist the company in evaluating the results of its investigation and serve as confirmation that the allegations were taken seriously and that proper corrective action was taken by the company.

The following example underscores the importance of counsel. An operational incident prompted an investigation that disclosed that a technician may have signed off work that was not accomplished. He later accused members of management (who were conducting their own investigation) of a cover-up to protect the company. The company subsequently brought in outside counsel to conduct the investigation.

The lesson here is that maintenance supervisors can and often do investigate routine operational violations, but they should not investigate allegations of records falsification.

Because of potential criminal implications, such investigations should be conducted by company counsel or outside counsel.

If falsification of records is proven, procedures should be re-evaluated in light of the findings to determine if any procedural changes are necessary. The extent and nature of any disciplinary action against individuals involved should also be considered. Although these steps may seem burdensome at the time, they will usually be viewed positively if the FAA or Justice Department becomes involved.

For safety reasons, the aviation community is very procedure oriented, particularly in maintenance, where manuals, work cards, checklists and work orders govern almost everything that technicians do. Technicians and their supervisors are far more vulnerable than pilots or controllers to a charge of records falsification if they fail to follow procedures because everything performed by technicians is recorded in logbooks or maintenance records.

In maintenance, the line between an improper repair and intentional falsification is often not clear; therein lies the great risk for those involved in the maintenance segment of the industry.

Most technicians would agree that the industry is held to a higher safety standard today than it was 10 to 15 years ago. The FAA no longer tolerates maintenance actions that are the product of someone's "good judgment" instead of written analysis or procedure. There have been many instances in which the agency has imposed civil penalties on operators and repair stations in addition to individual technicians for maintenance actions that could not be documented by appropriate maintenance records.

Like it or not, the FAR require that repairs be performed in accordance with procedures prescribed in the manufacturer's manual or otherwise acceptable to or approved by the FAA. Procedures cannot be omitted because someone does not believe they are necessary. Today's technicians must comply with regulations and procedures, and ensure that co-workers comply with procedures too.

About the Author

Marshall S. Filler is the senior partner with Filler, Weller & Tello, a Washington, D.C.-based law firm specializing in aviation law. The firm has conducted numerous training seminars in records falsification and other aviation regulatory compliance issues for companies, trade associations and the FAA. ♦

Dangerous Goods Awareness Training Available on Video

Handling, packaging, identifying and shipping of dangerous goods require specific training for the individuals involved. Technicians are not usually required to have such comprehensive training, but they need to be aware of the International Air Transport Association (IATA) regulatory issues involved with the transport of dangerous goods. DGI Training Center has developed an awareness training program intended to fulfill this need.

DGI's "IATA Air Awareness" training program provides an overview of the IATA dangerous goods regulations. This program is designed for people who are not directly responsible for handling or preparation of dangerous goods shipments but whose jobs require them to come into contact with or to be knowledgeable about hazardous material transportation. Employees who work directly with dangerous goods and require certification should attend a more comprehensive training session.

Program materials include a VHS-format videocassette, seven student workbooks designed to be used with the video, an instructor's guide,

record-keeping registration sheets, an examination and a sample certificate of completion.

Cost of the training program is US\$395. Persons interested in this program may contact: DGI Training Center, P.O. Box 620199, Woodside, CA 94062 U.S. Telephone: (415) 306-8450.

EPA Steps Up Enforcement Actions of Refrigerant Recycling Rules Violations

The U.S. Environmental Protection Agency (EPA) announced that it has taken 28 administrative enforcement actions against violators of the freon and chlorofluorocarbons (CFCs) refrigerant recycling rules recently adopted to protect the stratospheric ozone layer.

The enforcement actions involved two different rules. One regulation, issued in July 1992, prohibits automobile service technicians from releasing CFCs into the atmosphere during the servicing of motor vehicle air conditioners and requires those substances to be recycled.

The other regulation prohibits the release of ozone depleters into the atmosphere during the service and disposal of refrigeration or air conditioning equipment.

Of the 28 fines levied to date, three were for automobile service station violators, 18 were for resale of small containers of CFC and seven were for home and business violations. The fines ranged from US\$400 to \$65,225.

Some aircraft use CFC refrigerants in cabin cooling systems and many ground equipment units have air conditioning systems installed for operators' comfort. Technicians involved in the maintenance and servicing of these systems should ensure that their actions are in compliance with the rules.

Halon Recycling Corp. Begins Operation

The Montreal Protocol on Substances That Deplete the Ozone Layer established a schedule for ending global production of chlorofluorocarbons (CFCs), halons and other ozone-depleting substances. More than 100 countries are parties to this protocol.

Beginning Jan. 1, 1994, halon will no longer be produced in industrialized countries. Many users of halon

fire-extinguishing systems have been waiting for the development of approved substitutes before planning changes to their systems. Although most applications requiring halon will be replaced eventually by other chemicals, there are some applications that, at least for the foreseeable future, will still require halon. Aircraft-installed fire protection systems and many other industrial applications fall into this category.

The Halon Recycling Corp. (HRC) was established to facilitate the recycling of halon 1301. HRC is operating with the endorsement of the U.S. Environmental Protection Agency (EPA). HRC will provide a service for companies that require halon as a fire-fighting agent. HRC will assist in the redeployment of halon from unnecessary uses to critical uses, and aid in the transition to a halon-free world.

Many current owners of halon systems who have been able to remove the systems or replace them with alternative systems want assurances that the halon they make available for recycling will be handled responsibly. To serve this need, HRC has created a voluntary certification system to identify buyers whose requirements for halon can be justified. Buyers will be granted one of two designations: "registered" or "certified."

The registered designation is a representation to sellers that, in the opin-

ion of the buyer, the buyer has taken all reasonable economic measures to minimize halon use and emissions, and the buyer believes its use conforms to the essential use criteria.

The certified designation will bolster a buyer's application by assuring sellers that, in the opinion of HRC's independent review committee, the buyer's registration is legitimate.

HRC will maintain a data base of sellers and buyers and will provide

updated listings to each group on a regular basis. Its funding will come from listing fees and brokerage fees on successful transactions. HRC recently received a business review clearance from the U.S. Justice Department, and will operate as a voluntary, nonprofit organization.

HRC is located at 1025 Connecticut Avenue, N.W., Washington, D.C., U.S. 20036. Telephone: (202) 223-6166 or Fax: (202) 223-5979. ♦

MAINTENANCE ALERTS

This information is intended to provide an awareness of safety problems so that they may be prevented in the future. Maintenance alerts are based on preliminary information from government agencies, aviation organizations, press information and other sources. The information may not be entirely accurate.

Remain Alert To Bogus Parts

The U.S. Federal Aviation Administration (FAA) Flight Standards National Field Office recently issued an alert detailing a suspect bolt that was found in a de Havilland Twin Otter DHC-6 vertical stabilizer. The bolts (P/N MS21250-06022) did not meet the design criteria for these fasteners.

MS21250 calls for a hardness of RC39 to RC43. When tested, the bolts were found to be only RC30 to RC35, and did not bear the manufacturer's identification on the bolt head as required by the specification. These bolts are used in the forward attachment of the vertical stabilizer on the DHC-6, but may also be used in various locations on other aircraft.

Technicians are urged to inspect DHC-6 aircraft and to check inventories to ensure that bolts conform to specifications. If any suspect bolts are found, technicians should contact the FAA.

Water Leakage + Pressurization + Freezing Temperatures = Frozen Controls

In early 1992, a Canadian-owned McDonnell Douglas jet transport aircraft experienced an inflight incident when the aileron controls became frozen. Lateral control of the airplane was limited to five degrees of bank angle by using only the aileron trim and rudder control. Attempts to free the aileron movement were unsuccessful. The captain declared an emergency and was able to make an uneventful landing at a major airport.

After landing, it was found that a large accretion of ice had formed on the aileron cables and on the wing spoiler cables in the wheel well. The ice restricted movement of the cables, disabling the controls. The ice was not typical of that

associated with runway slush or snow. Tests concluded that the ice accretion was the result of a leaking over-wing exit-window seal that allowed water to enter the center wing box. Under pressurized conditions, the water drained into the wing box, leaked onto the cables, and at the ambient temperatures existing at cruising altitude, formed the ice that jammed the controls.

This specific exposure has been addressed by the aircraft manufacturer and a modification has been developed that should prevent this problem from recurring on DC-9 and MD-80 aircraft. The U.S. National Transportation Safety Board (NTSB) has recommended that the FAA make this service bulletin (53-179) mandatory by issuing an airworthiness directive (AD).

Aircraft technicians should be aware, however, that a similar situation could arise on other pressurized aircraft operating at high altitudes. Any evidence of water accumulation in center wing bays or wheel-well areas, where control cables pass through pressure bulkheads, should be investigated. If there is any indication that such leaks could result in control jamming, the condition should be reported to the manufacturer or the appropriate regulatory agencies as a potential design defect.

Extinguish Tailpipe Fires With Caution

A tailpipe fire sometimes occurs in a turbine engine after shutdown on the airport ramp. This is a dramatic event for passengers, but the fires are rarely serious. Action is required, but that action should be carefully considered and properly accomplished without panic.

A tailpipe fire usually results when oil that has leaked onto hot exhaust components is ignited when the airflow through the engine ceases. A small fire is not likely to do any damage, as long as it is confined to the exhaust area.

The recommended initial response is to motor the engine using the starter and blow out the fire. Starter actuation limits must be observed.

The use of the engine's fire extinguishing system is not recommended as long as the fire is contained within the tailpipe. Engine extinguishing systems only discharge into internal engine areas and will not extinguish a tailpipe fire.

If motoring does not extinguish the tailpipe fire, it may be necessary to use a portable fire extinguisher. Use of a portable fire extinguisher requires care in selecting the type of fire-quenching agent and in

discharging only enough of the chemical agent to extinguish the fire. Some fire extinguishing agents are very corrosive to engine components and should not be discharged into the interior of the engine. Consult company manuals for instructions on the preferred types of agents to be used on an engine.

The extinguisher should be used sparingly to prevent excessive local cooling to hot exhaust components. Agents have a rapid cooling effect, and localized cooling may cause more damage to hot exhaust components than high temperatures.

The use of any fire extinguishing agent on a tailpipe fire should be reported to the company engineering office. The source of the oil leak that initiated the fire must also be determined and proper corrective action completed before returning the aircraft to service.

Latch Closed When It Should Have Opened

Earlier this year, an international operator of a Boeing 767 experienced an accident when the airplane left the runway and skidded over a hill in slippery conditions. There was no fire, and all occupants evacuated safely.

During the evacuation, however, several passengers using the over-wing exits found that the off-wing escape slides had not deployed. Some passengers were injured when they jumped to the ground, while others re-entered the airplane and evacuated through another exit.

The 767 is equipped with an off-wing escape slide system. The slides are stored in compartments located along the fuselage at the trailing edge of each wing and inflate automatically when the compartment doors are opened. Four latches hold each escape slide compartment door closed.

The four latches are operated by a sliding latch train, so that when the latch train is moved aft, the doors open. Opening an over-wing emergency exit door activates an explosive squib actuator that pulls the latch train aft to open the off-wing slide compartment door.

In this accident, the left over-wing emergency exit door was opened by a passenger. However, the off-wing slide compartment door did not open and the slide did not deploy. It was determined that the forward latch on the compartment door was installed upside down. When the actuator pulled the latch train aft, the three correctly installed latches released, but the forward latch was *pulled to the closed position*, which prevented the door from opening.

The manufacturer stated that the latches are designed to be interchangeable for use in left- or right-wing slide compartments. Thus, the latch that was incorrectly installed in this left-hand installation would have been oriented correctly in the opposite right-hand installation.

These latches were the subject of an earlier airworthiness directive (AD), which required replacement with an improved model. It is believed that the latch was incorrectly installed by the operator during this replacement operation. The manufacturer had recognized this possibility and had issued revised instructions on the installation in an effort to prevent just such an occurrence.

As a result of this occurrence, the U.S. National Transportation Safety Board (NTSB) has issued safety recommendations to the FAA, calling for the agency to:

- “Issue an emergency AD to inspect all Boeing model 767 and 747 series airplanes for improper installation of the off-wing escape slide compartment door latches and require that any latch found installed improperly be removed and reinstalled properly before the airplane returns to service”;
- “Issue an immediate revision to AD 92-16-17 to include the additional information provided in revision one to Service Bulletin 767-25A0174, which provides operators with information on how to install the escape slide compartment door latches properly”; and,
- “Require Boeing to modify model 767 and model 747 escape slide compartment door latches to prevent the possibility of incorrect installation.”◆

NEW PRODUCTS

Wireless Intercom Enhances Ramp Safety

Many injuries and several fatalities have been suffered by technicians working on ramps with heavy traffic and high ambient noise. To communicate with the aircraft or tow vehicle driver, it has been necessary to have a hard-wired headset or intercom device requiring the technician to be "tethered" to the aircraft. This often limits the technician's field of vision and increases exposure to moving vehicles and aircraft.

Telephonics Corp. now offers a unit called Sure-Comm that the company says provides a radio capable of reliable communications in high-noise areas without plugging into the aircraft's intercom or requiring any outside power source. Developed in conjunction with a U.S. Department of Defense (DOD) program for wireless communication and control systems, the Sure-Comm system incorporates many new technological developments. The advancements claimed by the manufacturer include:

- Full duplex communication without a repeater;
- Ability to operate in a high-noise environment;

- Voice-activated switching (VOX);
- Frequency hopping (902 to 928 megahertz);
- No licensing requirement for operators; and,
- Aircraft intercom system interfacing.

In addition to the unit's use in push-back operations, the manufacturer says that it can be beneficial in de-icing operations, troubleshooting, engine run-ups and coordination between technicians. For more information, contact: Telephonics Corp., Communications System Division, 790 Park Avenue, Huntington, NY 11743 U.S. Telephone: (516) 549-6000.

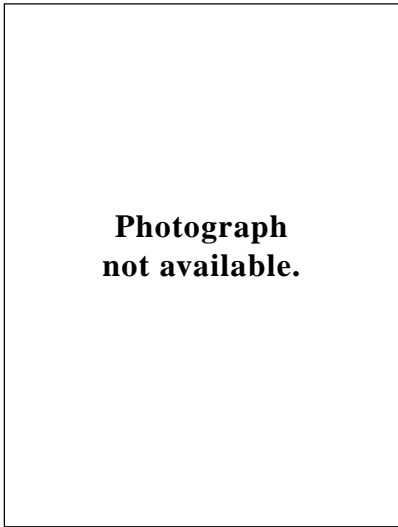
Wear Low-tech Clothing for Winter Protection

Gloves Inc. is a supplier of wool and cotton protective clothing for people who must work outside in cold climates. Among their current products is the "arctic hood," which is designed to provide

improved protection for the wearer against wind, rain and snow.

According to the manufacturer, the arctic hood has a woolen outer shell with a soft eight-ounce cotton jersey lining. The natural flame-retardant protection of wool makes it particularly suitable for use under a hard hat or other protective headgear.

The hood fits snugly around the face and under the chin and is available in a longer length to afford complete head and neck protection. One size fits all and it is washable for reuse.



Arctic Hood

For more information, contact: Gloves Inc., 85 Constitution Drive, Taunton, MA 02780 U.S. Fax: (508) 823-5884.

Passenger Safety Briefing Cards Produced From Data Base

Rand McNally & Co. has announced the availability of aircraft passenger safety briefing cards at a significantly lower cost to customers. The company claims to have created a data base of information about various types of aircraft. With this automated data base, the manufacturer offers standard cards for most aircraft types.

In addition, the manufacturer states that customized cards can be produced to meet special requirements on short notice. Rand McNally says it has drawn upon its extensive mapmaking experience to communicate a great deal of information in a small space by designing effective graphics for safety information cards.

For more information, contact: Rand McNally & Co., 8255 North Central Park Avenue, Skokie, IL 60076 U.S. Telephone: (708) 329-8100.

'Fastscan' Probe Detects Defects in Lap Joints

Hocking Corp. has announced a new product designed to detect cracks around fasteners in

multilayered lap joints. According to the manufacturer, the Fastscan eddy current probe is placed over the fastener and rotated 90 degrees. Cracks are indicated as a mixed signal on a "Phasec" 2.2 or 3.4 multifrequency eddy current instrument.

Hocking product bulletin PB-005 illustrates and describes the probes and provides information on the features and benefits claimed by the maker. Probe sizes and required equipment are listed, and illustrations show typical test panels with defect indications. Request a copy from: Hocking Corp., 50 Industrial Park Road, Lewistown, PA 17044 U.S. Telephone: (717) 242-2606.

Repair Station Capability Offered for Depleted Uranium Counterweights

Many aircraft use depleted uranium as counterweights on control surfaces or ballast installations where space is critical. Depleted uranium (DU) is 1.68 times the density of lead. Working with DU is, however, a specialized procedure, and the only U.S. Federal Aviation Administration (FAA)-certified repair station for DU counterweights is Nuclear Metals Inc. (NMI).

NMI says it can provide replacement counterweights or repair existing items to customer requirements. DU is said to be 20 percent less expensive than tungsten, the only material with a similar density. DU is available as precision investment castings. It can be machined into complex configurations.



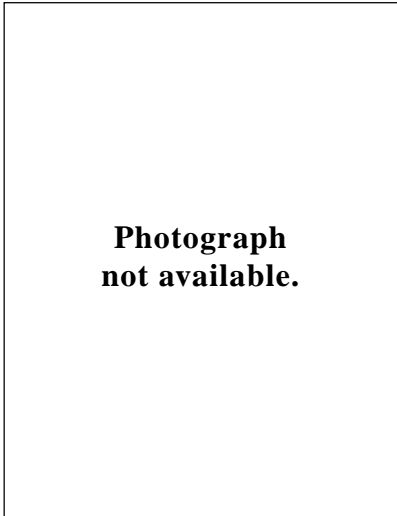
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Uranium Counterweights

Companies needing repair or disposal of depleted uranium ballast or counterweights contact: Nuclear Metals Inc., 2229 Main Street, Concord, MA 01742 U.S. Telephone: (508) 369-5410.

Safe-Grip Traction Granules — A Safe Alternative When Ice-Melting Chemicals Should Not Be Used

Many areas around ramps or hangars should not be subjected to potentially damaging ice-melting chemicals containing salt or other corrosive products. The Koos Shore Co. now offers an alternative that



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not available.**

Safe-Grip Traction Granules

it claims is harmless to the environment. Safe-Grip is a natural product composed of small, irregular granules that dig into icy surfaces to provide traction, the company says.

The product does not melt and therefore will not enter cracks and crevices with subsequent freezing and thawing. The manufacturer claims that Safe-Grip can be swept up and reused because it will not crush or crumble when walked on or driven over. The manufacturer claims that the product is economical, with only one cup per square yard required to provide nonslip traction on icy surfaces.

For more information, contact: Koos Shore Co., 4500 13th Court, Kenosha, WI 53141 U.S. Telephone: (414) 654-5301. ♦

Ergonomic Air-Powered Tools Enhance Operator Safety

Simonds Inc. has published a 20-page catalog describing a complete line of ergonomic air-powered production tools for electronic and light industrial applications. According to the manufacturer, this line of pneumatic tools can be fitted with different types of jaws for specific tasks such as cutting, crimping, trimming and bending.

The tools are designed for use by technicians involved in repetitive

tasks and are intended to replace hand cutters and pliers that subject the user to squeezing forces that can be injurious to hand and wrist muscles and joints.

To obtain a copy of the illustrated catalog, contact: Simonds Inc., 248 Elm Street, P.O. Box 100, Southbridge, MA 01550 U.S. Telephone: (508) 764-3235 or Fax: (508) 765-5125.

Slip Resistant Flooring Available for Aircraft Galleys and Entries

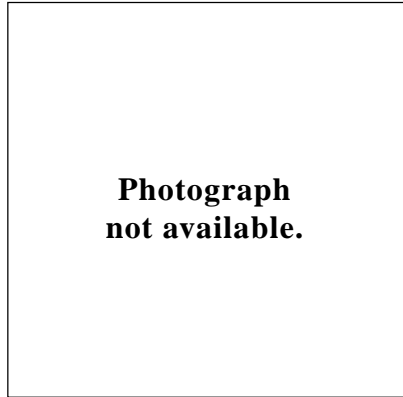
Preventing passenger and crew slip-and-fall accidents is an issue of increasing importance to the airline industry.

Altro Floors has developed a product called "Transflor," which the manufacturer claims meets this safety need in public transportation vehicles.

The manufacturer states that Transflor has a smooth surface, making it easier to clean and more economical to maintain. Slip and wear-resistant crystals embedded

throughout the flooring provide extra traction without the need for ribbing or studded patterns normally used in such floor coverings.

The product can also be installed in contoured or stair areas.



Transflor

According to the manufacturer, Transflor product meets the fire resistant requirements of U.S. Federal Aviation Regulation (FAR) 25.853(b). The material is available in a variety of colors to match interior color schemes.

For more information, contact: Altro Floors, 730 Los Altos Avenue, Los Altos, CA 94022.