Photograph not available.

Photographs courtesy of Boeing Commercial Airplanes publication Airliner.

Don't Get Caught With Your Parka Down

by
Robert A. Feeler, Maintenance Consultant

Whether you like it or not, if you live and work in the northern hemisphere, winter is coming. If you are ready for it, that first time the thermometer drops below zero or you wake up to find six inches of snow outside, it need not cause your spirits to drop with the temperature.

Many airlines and other commercial aviation operators have developed programs to "reindoctrinate" all ground operations, maintenance, and flight personnel in the whys and wherefores of coping with winter operations. USAir's "Win Over Winter" program is one example of a very successful method of assuring that all aspects of winter operations are addressed. Printed self-study guides are distributed, recurrent training classes conducted at various sites and, this year, a comprehensive video tape was produced for distribution to each of the airline's operating locations.

A key point in several winter awareness programs is establishing a checklist of items to be reviewed and accomplished well in advance of the onset of winter. Each area of re-

sponsibility should have its own checklist; however, for this discussion, we will focus only on the maintenance aspects of getting ready for winter.

Murphy's Law is alive and well in the winter. If fact, if something can go wrong, you can be assured that it will seem to do so twice as often in the winter. With proper planning and training however, really severe weather conditions need not be an obstacle to aircraft operations. Operators in Scandinavia and northern Canada regularly cope with temperatures of minus 25 to 35 Fahrenheit and snow driven by winds of 30 knots or more. With a little planning and thorough preparation, you too can survive another winter.

Preparing a Check List

A properly used pilot's checklist ensures that nothing will be overlooked in preparing an aircraft for a flight. A winter operations checklist can provide a ready medium through which you and your staff can check off the things which must be available and working correctly to operate and maintain your aircraft during the coming winter.

As you prepare your checklist, think back over previous winter experiences to recall what caused a problem or led to a flight cancellation. If you have not had the experience yourself, talk to others who have operated similar aircraft in cold climates. What went wrong? Which components required special preheating or specific lubrication treatment? What special precautions or draining was necessary to prevent water systems from freezing?

Winter operating needs can be divided into four areas:

- Personnel
- Ground Equipment
- Aircraft Equipment
- Deicing and snow removal

As you make up your checklist and develop your plans for winning over winter, perhaps these following guidelines will help you look back next spring and remember, "That was the worst winter in the past five years, but I won!"

Personnel Check List

Training — Who will be assigned each task? Has each person been previously trained or does he need a refresher?

Clothing — Do the technicians have proper boots, gloves, and parkas to protect them during the anticipated

Wind-Chill Chart

Without the wind blowing, the human body,normally attired, can withstand a reasonable degree of cold. But subject to wind, even a slight breeze, and the body heat loss can become dangerous to the individual's health. The chart below lists equivalent temperatures between skin exposure in still air compared with to varying wind speeds. It also issustrates the need for protective clothing and shelter under conditions of low temperatures and wind.

Actual Thermometer Reading °F

Estimated Wind Speed MPH	50	40	30	20	10	0	-10	-20	-30	-40	-50
	ESTIMATED TEMPERATURE F										
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125
35	27	11	-4	-20	-35	-49	-67	-83	-98	-113	-129
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132
Wind speeds greater than 40 MPH have little additional effect	Little danger for properly clothed person					Increasing Danger			Great Danger		
						Danger from freezing of exposed flesh					

To use the chart, find the estimated or actual wind speed in the left-had column and the actual temperature in degrees Fahrenheit in the top row. The equivalent temperature is found where these two intersect. For example, with a wind speed of 10 mph and a temperature of -10° F, the equivalent temperature is -33° F. This lies within the zone of increasing danger of frostbite, and protective measures should be taken.

Figure 1

conditions in your area? Can the liners be removed for use in less severe conditions? Are you prepared to get them cleaned or repaired quickly if needed?

Frostbite Hazard — Be sure all personnel are aware of the wind chill factor (See Figure 1). Airports, being flat and unprotected by the windbreak effect of buildings and trees, tend to be more susceptible to this hazard than other locations.

Supplemental personnel — Do you know where to go if someone be-

comes sick or if a blizzard demands more people than you have available? Under these conditions, qualified people are in demand elsewhere as well, so you need to know who you can count on for your needs during such emergencies.

Photograph not available.

Ground Equipment Check List

Batteries — If a battery was weak in September, you can expect it to die at the first snow fall. Replace it now. This is also the time to clean all of the terminal connections and to ensure that the cables are in good condition.

Tires — A worn vehicle tire may not be much of a problem August, but it sure can be slick in January. A slow leak in the summer can result in a flat tire at the first cold snap.

Chains — Do you have chains for your tow tug? Try them on now to be sure that they fit, (and that you know how to install them). **Then** put them on when snow is forecast, not after you are already stuck in the snow with the aircraft half in and half out of the hangar.

Lubricating Oil — Start the winter with clean winter weight oil in all ground equipment engines. Long periods of idling and oil dilution from over-rich mixtures are hard enough on fresh oil, but they can be disastrous to older oil which is already deteriorated. Do not neglect those seldom-used items like preheaters and deicer pumps. These small units work hard and must be dependable when called upon.

Anti-freeze and Cooling Systems — Use fresh anti-freeze and be sure it is adequate for 10 degrees lower than the worst expected conditions. Flush the radiators and check the hoses (they are much easier to replace as a preventive measure than during a blizzard). Cold soaking overnite and hours of hot idling will take their toll of cooling systems and fluids.

Tune-ups — Be sure engines are properly tuned and adjusted for win-

ter conditions. A de-icer unit that won't start in winter conditions is useless.

Preheaters — Check the burners and ensure that there are no leaks. Tune the engines and lube fan motors. Check any electrical cords and plugs. Are the ducts in good shape — are they long enough to reach the necessary points on the aircraft currently in your fleet. Are the connectors servicable? Be sure that there is a properly serviced fire extinguisher mounted on or adjacent to the unit.

Aircraft Equipment Check List

Covers and Plugs — Where are your wing covers, and the engine inlet plugs? Are the visibility streamers and attaching straps in good condition? Do both your flight and ground crew members know how to install them? It might be well to spread these items out on the hangar floor to see if they need repair or replacement.

Strut Seals — How are the aircraft oleo seals? One that was seeping in July is sure to collapse flat on that first cold night layover in Timbuktu. Many operators install new seals as a preventive measure before each winter season. While you're at it, remember to put spare seals on board.

Lubrication — Are there any grease points which need special attention prior to winter operation? Many aircraft have joints that are susceptible to binding or malfunction in cold weather unless the existing heavy grease is purged and replaced with a lighter lubricant.

Water Systems and Lines — How can you protect aircraft lavatory and galley water systems? Are there heaters, and if so, do they work? If systems must be drained, how do you purge them to be sure a low spot does not freeze and split or block a fitting?

De-Icing/Anti-Icing Equipment — Check over all de-icing and anti-icing systems. Be sure valves are clean and filters replaced. An intermittent problem is sure to become a total failure just when you need the system most. Check propeller, engine inlet lip, and surface de-icer boots for any damage, and assure that all are operating at full efficiency.

De-Icing and Snow Removal Equipment Check List

Inventory — Make an inventory of all snow removal and de-icing equipment. Set aside a spot for it and do not use it for any other purpose; this includes brooms, ropes, and

snow shovels. How much fluid is on hand; how quickly can you replenish your supply? Your stock on hand must be adequate to carry you through a resupply delivery period under the assumption it snows every day.

Operational Check — Operate the de-Icer unit; check the flow rate and mixture strength if it is a proportional unit. Confirm the operation of mixing valves and assure that you have a hydrometer or refractometer to check the fluid mix. Operate the heater (if installed) and check for temperature regulation.

De-Icing Procedures — Make up a chart or diagram to help operators most effectively de-Ice each type aircraft. You cannot afford to waste any expensive fluid or employee time.

De-Icing and Anti-Icing Precautions — There has been so much said and so many precautions published on aircraft de-icing subsequent to the Air Florida Flight 90 accident at Washington, D.C., U.S., several years ago that any reminders are sure to be repetitious.

However, the importance of adequate and proper snow and ice removal cannot be overemphasized.

The number of flights completed successfully may tend to make us complacent. Read your manufacturer's manuals and be sure that all affected personnel are thoroughly familiar with procedures and limits applicable to each aircraft type.

Tests conducted in Sweden show that a one millimeter layer of hoar frost on a wing can result in a 50 percent reduction of maximum lift and an increase in stall speed of up to 30 percent.

For de-icing and snow removal, there is only one solution: **Keep the surfaces clean.**

Snow Removal and Winter Protection of Aircraft — Unless you operate from a large commercial airport having its own professional maintenance crew, you may very have to contend with part-time or highway snow plow and road sanding crews at your airport.

Unless you want your aircraft to look like your perforated car fenders, it is wise to find out just what the crews are using to melt snow and ice on your taxiways and runways.

No salt or calcium chloride products should be used on the aircraft operating areas, regardless of what trade name they go by. Any sand used must clean, dry, free from lumps or frozen chunks, and have no rocks or cinders to cause foreign object damage (FOD) to the engine.

One Last Caution

Drive carefully. More ground equipment and aircraft are damaged during the winter months than all the rest of the year. Slow down, watch for slick spots, and do not pull your parka hood up so far that you can't see were you are driving. Stay healthy to enjoy that vacation on the beach next spring. You, too, can win over winter. ♦

NEWS & TIPS

Maintenance Technician of the Year Honored

Photograph not available.

Robert E. Arnold (right) receives General Aviation Maintenance Technician of the Year award from FAA Administrator James B. Busey during ceremonies in Washington, D.C., U.S.

Robert E. Arnold of Gasport, New York, U.S., has been named 1990 General Aviation Maintenance Technician of the Year by the U.S. Federal Aviation Administration (FAA) and the U.S. general aviation industry. The annual national award recognizes the important role played by professional maintenance technicians in aviation safety and in promotion of aviation technology.

FAA Administrator James B. Busey presented the award to Arnold in a ceremony at FAA headquarters in Washington, D.C., on October 31. Arnold also received gifts and mementos from a wide range of general aviation groups.

Arnold is owner and operator of Royalton Airport, near Lockport, New York, U.S., which he established 35 years ago, and owner and president of Tanger Aire Inc., a fixed base operation at Royalton Airport. He

also is owner and president of TRT Engineering, which designs and manufactures fuel management systems, airstrip lighting systems and stainless steel disc brakes.

The award program is sponsored by the AOPA Air Safety Foundation, General Aviation Manufacturers Association, National Business Aircraft Association, and the FAA. It also honors a Certified Flight Instructor of the Year.

Regional and Commuter Aircraft Service Center Under Construction

FFV Aerotech, a subsidiary of FFV-AM of Sweden, is constructing a major maintenance facility in Nashville, Tennesseee, U.S., which is scheduled to be in operation by March of 1991. R. Rick Townsend, vice president of sales for the new repair station, says that the facility will provide single point, single source service for regional and commuter aircraft in the United States.

The facility will include more than 32,000 square feet of shop space and will have hanger capacity for up to six of the 30-passenger aircraft which FFV Aerotech will specialize in. Maintenance capabilities will include hydraulic, mechanical, pneumatic, electrical, avionics, instruments, interiors, engines, propellers, landing gear components as well as sheet metal and composite structural repairs. Airframe maintenance, modification and inspection capabilities will be available for aircraft such as the SAAB 340 and similar size aircraft.

Fokker 50 Hot-High Variant to use PW 127 Turboprop Engines.

Fokker Aircraft of the Netherlands has placed an order with Pratt & Whitney Canada for 100 PW 127 turboprop engines to power a hot- and high-performance version of the Fokker 50. The PW127 engine that will replace the Fokker 50's standard PW125B engine is intended to improve takeoff performance by 10 percent and climb/cruise performance by about five percent. The performance gain is attributed to the use of a new, low-pressure compressor with increased mass flow and higher pressure ratio relative to the present low-pressure compressor. The two engines will be similar externally to allow installation interchangeability.

A variant of the PW127 engine also is offered, which will have a 10 percent mechanical power increase over

the standard engine. With a flat rating of 2,750 shaft horsepower (SHP), it is the intended powerplant for a future stretched version of the Fokker 50 that will accommodate 55 passengers.

Type certification of the PW127 engine is scheduled for the fourth quarter of 1992 with production deliveries to be ready for shipment thereafter.

Since introduction in August 1987, approximately 90 Fokker 50s have been delivered and current orders total about 140 with additional options.♦

MAINTENANCE ALERTS

This information is intended to provide an awareness of problem areas through which such occurrences may be prevented in the future. Maintenance alerts are based upon preliminary information from government agencies, aviation organizations, press information and other sources. The information may not be accurate.

Whoops!

A commercial corrosion preventive spray had just been used on the internal structure of a helicopter, with the access being through a hole opened by removal of a small skin panel on which a light fitting was mounted. When the maintenance technician was refitting the panel, an explosion occured. Electrical power had been applied to the aircraft after the spraying, but prior to closure of the access panel. The ground contact initiated when the technician put the panel in place created the spark.

Anti-corrosion sprays are frequently used with little thought for the explosive atmosphere created when working in an enclosed area. Good practice is to keep the power off and to be sure and use explosion-proof work lights when using such spray products.

Spark + Oxygen leak = FIRE

A Boeing 727 was being serviced at the gate during a through flight stop. Three flight crew members, 4 cabin attendants and 12 through passengers were on board when a muffled "boom" was heard in an area near the forward galley, and a cabin attendant saw flames extending several inches from a vent adjacent to the third row of seats. A mechanic was in a compartment below the cabin servicing the passenger oxygen system. The attendant shouted

"Fire" and an evacuation of the aircraft was initiated.

Within seconds, thick black smoke started to fill the cabin and flames began to burn through the forward right side of the fuselage. All passengers and crew evacuated safely, including the mechanic. The aircraft cabin was destroyed by fire and a hole several feet in diameter burned through the fuselage, just behind the forward galley service door.

The mechanic stated that he had completed servicing the passenger oxygen system and was about to leave the compartment when he saw sparks emitted from an area beneath a battery pack, adjacent to the fuselage sidewall and above and behind the oxygen cylinders. He then heard a muffled noise and saw a flash of white light that enveloped the oxygen system flow control unit. He immediately departed the aircraft and initiated fire and rescue efforts.

Although the extensive destruction by the fire precluded a determination of the exact cause of the fire, based on the evidence, the U.S. National Transportation Safety Board (NTSB) believes that the fire most likely originated in the passenger oxygen system's flow control unit. It was also found that this aircraft had had six write-ups in the previous four weeks about low oxygen quantity in the passenger system. The operator's chronic/repeat write-up system had not flagged this problem. As a result of this experience, the operator conducted a fleet inspection which disclosed oxygen system leaks in 20 out of 129 Boeing 727-200s in its fleet.

The rapidity with which this fire developed was such that had the aircraft been more fully occupied, a successful evacuation would have been doubtful. Other instances of of oxygen-fed fires have occurred in the past during servicing operations at the gate.

The NTSB issued several safety recommendations to the FAA, as a result of this near catastrophe; however, we will mention only those suggestions directed specifically at maintenance activities:

- Prohibit air carriers from servicing oxygen systems while passengers are aboard the aircraft.

- Review airline maintenance-related trend analysis programs to verify that such programs can detect a leaking oxygen system.

- Require air carriers to perform a one-time inspection of the oxygen systems on their aircraft and to promptly repair all leaks.

Worn Safety Pin Retracts Nose Gear

Recently a DC-10 nose landing gear downlock safety pin became disengaged from the nose landing gear downlock links, allowing the nose landing gear to inadvertently retract during ground maintenance. A post-incident investigation showed that the safety lock pin had backed out of the mating holes in the downlock links under the effects of a 14-knot wind on the red streamer attached to the pin.

The safety lock pin had been installed in the nose gear by the flight engineer. Upon selecting "gear up" to check a retract actuator, the nose gear retracted allowing the nose of the aircraft to settle onto a maintenance truck parked underneath. An initial evaluation of the pin indicated the part appeared to be servicable and the locking balls functioned properly. Closer examination, however, disclosed that the top of the plunger had been slightly deformed on one edge.

Experimentation showed that this deformation would lock with the "T" handle when turned to a specific point, thus retracting the locking balls. Tests showed that the pin could be easily removed in this condition. Similar pins are used in many locations on numerous aircraft types.

The operator suggests that all flight and maintenance personnel visually inspect all in-service pins for damage. A further assurance of positive engagement is, after installation of the safety pin, to apply force to the handle or ring with the thumb removed from the plunger.

Mystery of the Missing Fuel

The maintenance crew received the aircraft with on inoperative number 3 fuel quantity gauge. The maintenance and flight crew defueled number 3 tank via tank-to-tank transfer procedures into the number 1 and 2 tanks. The fueler then uploaded 1,642 gallons into number 3 tank, verified by the second officer who was observing the truck gauge. The fueler began fueling tanks 1 and 2 while the crew returned to the cockpit.

A fuel spill occurred out of the right wing vent and fueling was stopped. A discussion ensued between the maintenance and flight crews to determine where the spilled fuel came from. They thought it might have come from an overfill of tank number 1, but the gauge showed 8,500 pounds. That reading indicated the possiblity of two inoperative fuel gauges. Maintenance personnel were still uncertain where the spilled fuel

came from. Fuel flow and drip stick checks of numbers 1 and 2 tanks confirmed that the number1 fuel quantity gauge reading was reliable. At that point, they assumed that number 3 tank was overfull and causing the fuel spill.

Fuel from number 3 tank was transferred back to number 2 tank. The initial reading of number 2 tank at the start of fuel transfer was 10.4 and 22.8 at the end, which indicated that there was 12,400 pounds of fuel in number 3 tank, completely full. Maintenance said the spill had to have come from the number 3 tank. Number 3 tank was emptied. Then 11,000 pounds of fuel was measured back into number 3 tank from number 2 tank by internal tank-to-tank transfer. Number 2 tank fuel pumps were shut off at tank reading of 11.8 in number 2 tank. The fueler then uploaded fuel into number 1 tank to bring it up to 11,000 pounds.

The aircraft departed the gate, taxied to runway and the takeoff was initiated. At approximately 85 knots, the second officer reported that the number 2 boost pump low pressure lights came on for tank number 3, an engine fail light illuminated, and the second officer and first officer called engine failure. The captain aborted the takeoff at 100 knots. The aircraft was brought back to the gate and maintenance again consulted. Tank number 3 was then thought to be empty and this was confirmed by pulling a drip stick quantity check in number 3 tank. The tank was empty. After discussion between the flight crew and maintenance, it was thought that when the 11,000 pounds of fuel had been earlier transferred from number 2 to number 3 tank, the fuel went into the fuel truck instead of into the number 3 tank. This theory was tested by connecting the fuel truck to another aircraft and it was observed that the fuel did in fact go into the truck instead of aircraft tank number 3. A second truck was tested the same way and, this time, the fuel did not go into the truck.

Lessons Learned:

- Truck fill hoses should be disconnected from the aircraft any time tank-to-tank transfer is being done.

- Fuel drip sticks should be used as intended to confirm fuel in tank(s) with questionable or inoperative gauges.

Does Murphy Make Blue Ice?

Murphy's Law states, "If something can go wrong, it will go wrong." Since aircraft got "modern" with built in holding tanks to replace the old "honey buckets" of the DC-3 era, the exposure to leaks of lavatory tank

fluids has plagued us. Internal leaks are messy and often are the cause of some nasty corrosion.

External leaks which lead to frozen globs of "blue ice" forming outside the airplane however, are another story.

The first few incidents reported were no big deal, in fact a few were downright humorous. One of these early reports involved a report of a midwestern farmer finding a mysterious "bluish meteorite" in one of his fields. He noted that it was very cold so he quickly put into his freezer and called the nearby state university. The astronomers were ecstatic to have an opportunity to examine the fallen "meteorite." However, they soon discovered that their "meteorite" had all too familiar similarities to the contents of the farmers outhouse when it began to thaw out in their laboratory.

More recent examples of Murphy's handiwork are much more serious. With aft-mounted turbine engines and lavatory drain fittings forward of the engine inlets, we now have the opportunity for one of these errant chunks of blue ice to dislodge from the airframe and enter the engine inlet. Turbine engines are very intolerant of large chunks of ice. The engine imbalance created as a result of ingesting these foreign bodies has resulted in an engine literally ripping itself off the airframe mountings in at least three instances. Many other case of severe engine damage due to the ingestion of blue ice have also been documented.

The U.S. U.S. National Transportation Safety Board (NTSB) has recommended that FAA conduct a directed safety investigation of all transport category, turbine-powered airplanes to evaluate ice ingestion potential and to take appropriate action to preclude in-flight engine or airframe damage.

The immediate answer is for maintenance crews to improve the condition of lavatory tank drain fittings and seals. Come on guys, its a nasty job, but somebody's got to do it.

Another Exhaust System Failure

A Piper PA-46-350P Malibu Mirage crashed into trees just short of the runway at a midwestern U.S. airport. The pilot and two passengers survived with serious injuries. The pilot reported that the engine lost power just as he broke out of an overcast and had the runway in sight.

Investigation of the powerplant revealed that the power loss was the result of a separation at the engine's left turbocharger transition pipe

flange and the wastegate transition mating flange. The two clamping bolts and the self-locking washers that connect the flanges were missing. The aircraft was less than 90 days old and had approximately 65 hours total flight time at the time of the accident. The U.S. National Transportation Safety Board (NTSB) was made aware of three other incidents of separation at the turbocharger-to-wastegate transition flanges. In all instances, the engine suffered partial power loss and resulted in precautionary landings.

The manufacturer has issued Service Bulletin No. 491 recommending that the clamping bolts be inspected and replaced. The NTSB has issued a safety recommendation to the FAA calling for the issuance of an airworthiness d (AD) irective making the service bulletin mandatory. ♦

NEW PRODUCTS

Icemelter Promises Safety with No Corrosion

A new ice melting produce promises effective and non-corrosive ice removal from airport runways, taxiways and ramp areas. Safety Step

Photograph not available.

Icemelter is a chloride-free, non-corrosive product which conforms to FAA Advisory Circular guidelines.

The product is said to work fast at low temperatures to quickly penetrate and break ice while inhibiting refreezing. Residual effects are said to further inhibit ice bonding on the surface for two to three days after each application. Because the produce does not attract moisture from the air, which can lead to package breaking and spilling, it can be stored for later use as required. Safe Step Icemelter is packaged in 50-pound bags.

For further information contact Starmark/Milwaukee, 1110 Old World Third Street, Milwaukee, WI 53203, U.S. Telephone (414) 273-6700.

Fuel Test Instrument Measures Contamination

A test unit designed to meet the quality assurance needs of fuel suppliers and operators is now available after three years of development in collaboration with users. The TMI Accumetric Fuel contamination detector is said to capable of providing immediate measurement of the particulate and free water content of petroleum fuels. It uses standard 37mm or 47mm membrane filters to measure particulates and similar pads treated with a fluorescing chemical

Photograph not available.

to detect free water.

Sampling is a accomplished on site with results obtained immediately. Total test time for both particulate and free water detection averages three to seven minutes. The manufacturer states that accuracy is within $\pm$ 1.5 parts per million for free water and $\pm$ .1 MG/L for particulates.

The unit is built into a fiberglass carrying case and is operable from the included battery pack or from 120 VAC power.

This unit is designed to enable operators and fuel suppliers to assure the quality of fuel provided to the aircraft and entrance the safety of operations whenever fuel contamination is suspected.

Complete specifications, technical data, and laboratory reports can be obtained from TMI Technology and Innovation, P.O. Box 11289, 2700 Nuttman Avenue, Ft. Wayne, IN 46857, U.S. Telephone (219) 747-0587.

New Engineering Resource: Lightning Protection of Aircraft

This 500-page hard-bound handbook is designed for lasting reference by technical and operational specialists concerned with lightning protection design and certification of aircraft, aerospace vehicles, systems and components. the book, published in 1990, is an update of an earlier 1977

edition and contains 18 chapters comprising 43 tables, 617 figures, 478 equations, a complete index and more than 500 references.

The book is published by FSF member company lightning Technologies Incorporated, and Further information can be obtained from them: Lightning Technologies Incorporated, 10 Downing Parkway, Pittsfield, MA 01201. Phone/FAX (413) 499-2135.

Barrel Top Mat

A ready-to-use, absorbent mat is available to keep fluid supply barrel tops clean and neat. Specially cut to fit the top of a barrel fitted with a

Photograph not available.

dispensing pump, this product is said to absorb those inevitable but annoying pump leaks and drips that accumulate on barrel tops. Packed 25 to a carton, each mat will absorb more than one quart of accumulated drips.

Corny Absorbent Is Environmental

Liquid spills in the hangar, shop or on the ramp can be absorbed and environmentally disposed of by using a product made from milled and refined corn cobs. Dri-Zorb was recently introduced by an Ohio agricultural firm, the Andersons. The product is claimed to have superior absorption and disposal advantages over clay absorbents.

There are two types of corn-based absorbant medium available. Dri-Zorb 1 is designed to absorb soluble oils, water, and water-based liquids. Another formulation, Dri-Zorb 2, is formulated for use with heavy oils and many chemicals.

Both products are claimed to offer significant absorption over clay absorbants by almost two to one in tests. They also incinerate efficiently with 7,900 BTUs per pound and leave only 1.6 percent of ash residue compared with clay absorbants that leave up to 92 percent of their original mass after incineration, according to the manufacturer.

Further details on these absorbent materials may be obtained from The Andersons, P.O. Box 119, Maumee, OH 43537, U.S. Telephone (800) 537-3370. ♦