Hostage-taking and Terrorism

Terrorism is a guerrilla war we cannot win — but dare not lose.

by
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Terrorism is defined as the systematic use of violence such as bombing, killing, hostage-taking and hijacking to promote a political objective. It is guerrilla warfare, characterized by irregular forces that launch small-scale, limited actions, often in conjunction with a broader political or military strategy.

National and international terrorism has become an element in modern political behavior. The background and motives of terrorists may be:

- political;
- criminal (ransom);
- religious;
- mental:

  a) intoxication (alcohol, drugs); and

  b) psychosis, especially paranoiac.

The United Nations has made several declarations against terrorism, but it has not been able to agree upon a definition of terrorism. The organization on one occasion had to convene a meeting in Geneva rather than in New York to hear Palestine Liberation Organization leader Yassir Arafat. He is a freedom fighter for some people, but for others in the United States and Israel, he is a terrorist.

Some citizens are at greater risk of being taken hostage. These include government employees (especially those serving outside their home countries), top officials of international companies and certain individuals or groups who may be identified with political symbols. Hostage-taking has become a big business — not only for terrorists, who have reaped considerable financial gains from it, but also for legitimate business that provides insurance and security against hostage-taking.

It is possible to become an inadvertent hostage — someone can become a hostage merely by being where a terrorist crime occurs. People may become hostages because they are passengers in a hijacked aircraft, occupants in a government building during a terrorist takeover, or aides to a more important hostage. Tertiary victims are all others — even an international public — who witness the crime or who are affected by it.

Kidnapping for personal and political gain has been recorded throughout history. During the past 20 to 30 years, there has been an increase in politically motivated kidnappings, which have received considerable press coverage[6]. A hostage may be taken because he is valuable to someone else, is prominent, is hated by his captors, is considered a source of trouble by his captors, or is likely to be the subject of widespread publicity.

Hostage-taking involves the manipulation of an individual or a group by threats to obtain an advantage. One or more persons are kept, usually by force, to force compliance with a demand or agreement. The captor wants something and often threatens to harm the hostage unless his demand is met. Therefore, a major concern of the hostage is survival[6].

In hostage-taking, there are three main elements: the captor(s), the hostage(s) who is the secondary victim and the primary victim who is being coerced to provide the sought-after advantage to the captor. The hostage's importance to the captor lies in the value of the hostage to the primary victim[6].

Some terrorists plan their crimes carefully, while others may capture hostages in passionate, insane frenzies or during interrupted crimes. Most terrorists, however, plan well. They even may have been trained in special camps or schools where they learned to use explosives and chemical and biological warfare, plus preparation of anti-personnel minefields[2].

A sophisticated terrorist will take steps to prevent himself from becoming vulnerable by any relationship with a hostage. He knows that any attachment he forms is to his disadvantage. He may place a bag over a hostage's head and make him sit facing a wall. Eye contact and verbal communication with a hostage may be forbidden. Putting a hostage in isolation, torturing him and rotating guards decrease the possibility of the "Stockholm Syndrome," where an alliance or friendly relationship develops between captor and hostage.

Group dynamics become complex when several hostages are held together, and some individuals assume leadership or advisory roles similar to those of a priest or a doctor. The process is aided if they are allowed to talk to each other; sometimes they are forbidden to communicate. Even if they are tied, blindfolded or gagged, however, some communication is usually achieved through body signals, written notes or tapping codes.

The hostage often feels an intense fear of death ... .

A hostage victim may experience a variety of reactions to environmental conditions and stress, including feelings of isolation, claustrophobia, disorientation in time and space, uncertainty, dissociation and even hallucinations. Stress is defined here as the perception of threat to physical and psychological well-being, and the perception that the individual's responses are inadequate to cope with it[12].

The hostage often feels an intense fear of death, as well as rage and indignation. There may be intermittent periods of denial, during which the situation is believed not to be real, or there is no danger. This a common and effective coping device, but it usually cannot be maintained. When denial fades, the hostage begins to assess the real dangers to his life[18].

The hostage suffers loss of autonomy and privacy. Conditions where hostages are held vary widely, and the overall situation is a source of great stress.

The hostage must adjust to the captor and his possible cruel behavior, which may include yelling, threats, physical abuse, coercive persuasion and torture. Furthermore, the hostage may have to cope with the death or injury of a fellow hostage. This may induce feelings of fright, relief at not being the victim or guilt for feeling such relief. He may feel guilty for being captured and, perhaps, may feel extremely self-critical[18].

A hostage may be bewildered by political rhetoric and outrageous demands of the terrorists that ignore any value of the victim except as a pawn, and he may feel inherently valueless to both the terrorist and the authorities. The possibility that the authorities may stop negotiations and opt for armed intervention supports the hostage's perception of being in imminent danger from the terrorists and the authorities[13].

"Tense and Dangerous" Describes Hostage-taking Phases

Ordinarily, there are three phases in terrorist hostage-taking. The first and last stages are the most tense and dangerous, and most hostage deaths occur in these periods. Negotiators must be aware of all these stages to adjust their strategies and aim for a successful end of negotiations.

- Step one. Initially, the captors are highly excited. They are probably enthusiastic about their usually well-planned endeavor. However, any captor suffers from uncertainty and can quickly become violent to keep hostages under control and to show that he is serious. There are high levels of stress and vigilance that must lower substantially before negotiations can begin.

- Step two. As negotiators develop information, a relatively more stable phase occurs. If the hostages are in an accessible place, specially trained anti-terrorist forces may surround and seal off the area. Captors and hostages begin to learn a little about each other. Ironically, captors, in a sense, become hostages, too. They are unable to leave or to vary their surroundings. They may have fears about their own lives. Terrorists and hostages became dependent upon the negotiators.

- Step three. Danger escalates in the resolution phase. All parties tend to be impulsive and worried, and violence becomes more likely. Captors do not want to fail in their mission and they are more likely to kill hostages when they sense a loss of power or defeat.

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While held captive, and the hostage is allowed to live, he begins to feel that, if the authorities would give in to terrorist demands, then his captors would not have to kill him. He may think that the authorities are responsible for whether or not he lives, and a fear of the authorities develops. He may become certain that the police are not doing enough to secure his release, that they no longer care about him and that they may even shoot him during an assault. Many hostages develop a greater fear of being killed by a police assault than they fear the captor[18] .

Tragedy Birthed NegotiationTechniques

In 1972 — the year of the attack on Lod Airport [The Japanese Red Army terrorist group attacked Israel's main airport on May 31.] and the massacre at the Munich Olympics [The Black September terrorist group massacred several Israeli Olympic athletes on September 5.] — marks the time when hostage negotiations came to be deliberately and systematically developed as a technique for dealing with hostage-takers[3].

It is a good negotiation technique to encourage the captor to see his hostage as a human being. This may be done by asking the captor to allow the hostage to talk on the phone with the negotiator, or by asking the captor to check on the health of a particular hostage, or by discussing with the captor some of the family responsibilities of the hostage[15]. The captor can be asked to take food orders, so that the interaction with the hostage is increased. Interaction is also furthered by supplying food that needs some group participation in its preparation[18].

A successful negotiation is one in which the hostage is released alive and the hostage-taker is captured with no deaths among hostage-takers, negotiators or bystanders. To obtain this result, many factors must be considered and controlled[3]. Among these, which are important to any authority faced with a hostage situation, are:

- policy and priorities concerning negotiable items and well-being of participant(s);
- existence of interagency cooperation;
- an agreed-upon chain of command;
- a mutually supportive relationship with the news media, based upon trust and a common concern for the protection of human life;
- knowledge of and ability to use available support services, including, assault teams and precision firearms capability;
- familiarity with necessary and available equipment such as ambulances and communication devices; and,
- an intelligence-gathering capability.

Hostage and POW Share Similar Trauma

The hostage is a strategic psychological weapon in this guerrilla war, and experience has made such a "prisoner of war" (POW) a valuable asset to the captor rather than a liability[8]. Anyone may become a POW in this guerrilla war.

Some experiences of POWs are also experienced by hostages, such as long periods with fear of dying, total helplessness, repeated horrifying events, and attacks on self-esteem and personality[7]. A hostage released unharmed physically may not have been treated well. It is the intensity of the experience, not its duration, that is an important factor in the development of psychological sequelae (traumatic neuroses), or aftereffects such as post traumatic stress disorder, PTSD (March/April 1992 FSF *Cabin Crew Safety*).

However, the trauma suffered by a hostage is severe and may have immediate and long-lasting effects; the terrorist's victim often becomes the psychotherapist's patient[6,13]. A terrorist victim is frequently an unwilling patient, and a therapist may be perceived as a hostile, threatening figure[13].

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Adverse consequences are not confined to a hostage, but may extend to the hostage's family. The pathogenic factors in hostage/terrorist experiences include sudden helplessness and loss of control, total loss of familiar routines and relationships, imminent threat to life, and later possibly the bewildering psychological transformation of the terrorist captor into an all-powerful "protector" from the authorities.

Psychological support should be offered to all victims and their families after their release, because intensive intervention may prevent some of the long-term consequences of the traumatic experience[6]. Furthermore, it will be a greater help for them to know that such reactions are not abnormal, but on the contrary are common and can be expected after such experiences.

Several traumatic neuroses[7] may be observed in a hostage victim that can include:

- Anxiety responses tend to occur soon after the events. They may be triggered by anniversaries and incidents that stir the memory long afterward. Nightmares, sweats, startled reactions to loud noises and inability to concentrate are not uncommon. They may lead to self-medication, drug abuse, alcoholism and dietary changes detrimental to health.

Symptom treatment is indicated and is important.

- Physical and psychosomatic symptoms cause other problems. Captivity imposes much physical and psychological stress. There may be head injury, dehydration, contaminated food, frostbite and many other stressors. Thorough medical examination and re-examination are indicated.

- A pattern of paranoia may develop, in which negative feelings are projected and a victim might feel watched, threatened and persecuted. There may be a grain of truth in these feelings — the ex-hostage is suddenly a public figure, and his story is known by strangers. If he speaks ill of his captor, he may fear reprisal on very rational grounds, but for some victims (and their families as well), this fear is out of proportion to reality.

- "Survivor's identity" may emerge, characterized by a near paranoiac suspicion of others or an altruistic, self-sacrificing attitude[1].

Stockholm Syndrome may occur when an alliance forms between captor and hostage ... .

Stockholm Syndrome Surfaces

Stockholm Syndrome may occur when an alliance forms between captor and hostage, whereby both express a fear, distrust or anger toward authorities[11]. The syndrome was identified after a 131-hour attempted bank robbery in Stockholm, Sweden, during 1973. A man was interrupted during the crime and he took four hostages. After the hostages were released unharmed and the man was taken into custody, it was learned that the victims grew to fear the police more than they feared the foiled robber. There was evidence of sexual activity within the bank vault, and one of the hostages became engaged later to the would-be robber[14].

There are three primary components of the Stockholm Syndrome[4, 12, 15]. They include:

- Positive feelings on the part of the hostage toward the captor. The positive contact is generated by lack of expected negative experiences (beating, rape or physical abuse), rather than by an actual action on the part of the abductor[15]. The captor is looked upon as "giving life" by the act of not taking life[6] and may be seen as a good and giving person.

- Negative feelings by the hostage toward authorities.

- Positive feelings by the captor toward the hostage develop gradually and are often well established by the third day. This is a hoped-for emotional climate by negotiators, because it makes it more difficult for the captor to harm the hostage[18] whom he has come to know and, on occasion, to love[15].

It has been suggested[16] that the Stockholm Syndrome is preceded by a "frozen fright" response, often seen in a victim of immense terror who has no chance of escape, and whose only hope for survival depends on his captor. The hostage is in a hostile environment, helpless, isolated and, as an infant, totally dependent on his captor for food, shelter, toilet facilities and — ultimately — life.

Stockholm Syndrome can help or hinder negotiations, but the captor may be kept from killing his hostage by such a development. However, if the hostage identifies too closely with the captor, he may be uncooperative with authorities before and after his rescue. Thus, (police) negotiators do not confide in the hostage if an assault is planned, and it is recognized that the legal prosecutor might lose its star witness who may promote the terrorist cause.

Profiles and Motives Vary

Profiles and motives of terrorist activities are varied[10,17]. They may be:

- Nationalistic, separatist or ethnic (Basque Fatherland and Liberty [ETA], Irish Republican Army [IRA], Sikhs, Tamils, Kurds, etc.);

- Ideological — left/right, anarchistic, nihilistic (Taupamaros, Red Army Faction, Action Directe, Celles Com, Red Brigades, 17 November, Japanese Red Army);

- State-related organizations, usually said to be financed and directed by countries such as Libya, Iran, Iraq, Syria, North Korea and Yemen. The aim of the organizations is "to pull feathers from the eagle's tail and annoy the lion, while staying out of their claws"[10]. They may be especially effective because the terrorist groups receive state resources, support from effective intelligence organizations and relatively modern weapons from surplus;

- Religious fanatics such as Shiite fundamentalists, Hezbollah, Amal, militant Zionists, etc. Terrible deeds are performed in the name of "God"; and,

- Mercenaries, the best example of whom is said to be "Carlos the jackal," whose professional group kidnapped Organization of Petroleum Exporting Countries (OPEC) delegates in Vienna in 1975. Such organizations are at the disposal of those who pay the most. Mercenaries are also said to operate professional training schools for terrorists.

Further classifications[10] of terrorists include the following:

- The leaders. These include both sexes, often from the well-educated socio-economic middle class. They are often multilingual and fanatical, with strong personalities and politically active;

- Opportunists and criminals. These are often males, with limited educations, 20-30 years old. They are usually from a lower socio-economic class, often with a criminal past. They are interested politically to a lesser degree than the leaders; and,

- Followers. These include both sexes with good educations, 20-25 years old, from the socio-economic middle class. They are usually multi-lingual, with weak personalities, and are also active politically before enlistment.

The fight against terrorism has been called "a war we cannot win — but dare not lose"[10]; we all have a role in this war. We never know when or where this war will break out, but we must be prepared for it.

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U.S. Civil Aviation Safety Statistics 1991

by
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Based upon statistics provided by the U.S. Federal Aviation Administration (FAA), the U.S. National Transportation Safety Board (NTSB) reported in 1991 that U.S. civil aviation logged approximately 47,960 million total hours. The hours flown are categorized as follows: airlines (air carriers operating under U.S. Federal Aviation Regulation [FAR], 14 Code of Federal Regulations [CFR] 121) flew 11.8 million hours, or 25 percent of the total; commuter air carriers and air taxis (air carriers operating under FAR 14 CFR Part 135) flew 5.4 million hours, or 12

Table 1
Accidents, Fatalities and Rates
Air Carriers and General Aviation 1991
(Preliminary Data)

	Accidents		Total	Aircraft		Accident Rates Per 100,000 Aircraft Hours		Accident Rates Per 100,000 Departures	
	Total	Fatal	Fatalities	Hours Flown	Departures	Total	Fatal	Total	Fatal
Air Carriers Operating Under 14 CFR 121									
Scheduled	26	4	62#	11,250,000	7,500,000	0.231	0.036	0.347	0.053
Nonscheduled	1	0	0	580,000	270,000	0.172	0	0.370	0
Air Carriers Operating Under 14 CFR 135									
Scheduled	22	8	99#	2,100,000	2,700,000	1.048	0.381	0.815	0.296
Nonscheduled	84	26	69	3,270,000	n/a	2.57	0.80	n/a	n/a
General Aviation+	2143	414	746	30,760,000	n/a	6.90	1.35	n/a	n/a

Exposure data estimate source: U.S. Federal Aviation Administration (FAA).

\# Both of these fatality totals (Scheduled 14 CFR 121 and Scheduled 14 CFR 135) include 12 people killed aboard a Skywest commuter aircraft and 22 people killed aboard a USAir airliner when the two aircraft collided.

\+ Includes accidents involving U.S.-registered civil aircraft flown under rules other than 14 CFR 121 and 14 CFR 135. Accidents on non-U.S. soil and in non-U.S. waters are excluded.

n/a Data not available.

percent; and, general aviation aircraft flew 31 million hours, or 63 percent.

During the 12-month period, airlines in all operations were involved in 27 accidents, four of them fatal, which accounted for 50 total airline aircraft fatalities. Commuter air carriers and air taxis were involved in 106 accidents, 34 of them fatal, with a total of 168 fatalities. General Aviation recorded 2,143 accidents, 414 of them fatal, with a total of 746 fatalities (Table 1).

Table 2
Accidents, Fatalities and Rates
U.S. Air Carriers Operating Under 14 CFR 135
All Scheduled Service
(Commuter Air Carriers*)
1981-1991

	Accidents		Fatalities		Aircraft	Aircraft		Accident Rates @ Per Million Aircraft Miles		Per 100,000 Aircraft Hours		Per 100,000 Departures	
Year	Total	Fatal	Total	Aboard	Miles Flown#	Hours Flown#	Departures#	Total	Fatal	Total	Fatal	Total	Fatal
1981	31	9	34	32	193,001,000	1,240,764	1,835,144	0.161	0.047	2.498	0.725	1.689	0.490
1982	26	5	14	14	222,355,000	1,299,748	2,026,691	0.117	0.022	2.000	0.385	1.283	0.247
1983	17	2	11	10	253,572,000	1,510,908	2,328,430	0.067	0.008	1.125	0.132	0.730	0.086
1984	22	7	48	46	291,460,000	1,745,762	2,676,590	0.075	0.024	1.260	0.401	0.822	0.262
1985	21	7	37	36	300,817,000	1,737,106	2,561,463	0.070	0.023	1.209	0.403	0.820	0.273
1986	15	2	4	4	307,189,000	1,724,010	2,798,211	0.049	0.007	0.870	0.116	0.536	0.071
1987	32	10	59	57	350,879,000	1,946,349	2,809,918	0.091	0.028	1.644	0.514	1.139	0.356
1988	19	2	21	21	380,237,000	2,092,689	2,909,005	0.050	0.005	0.908	0.096	0.653	0.069
1989	16	5	31	31	393,619,000	2,240,555	2,818,520	0.041	0.013	0.714	0.223	0.568	0.177
1990	15	2	4	4	444,063,000	2,482,809	3,079,117	0.034	0.005	0.604	0.081	0.487	0.065
1991P	22	8	99+	77	370,000,000	2,100,000	2,700,000	0.059	0.022	1.048	0.381	0.815	0.296

P Preliminary data

\# Source of estimate: FAA.

\+ The fatality total includes the 12 persons killed aboard a Skywest commuter aircraft and the 22 persons killed aboard a USAir airliner when the USAir flight collided with the commuter on the runway.

@ Rates are based on all accidents including some involving operators not reporting traffic data to RSPA (Research and Special Programs Administration).

* Includes accidents involving all-cargo air carriers when those accidents occurred during scheduled 14 CFR 135 operations. All-cargo air carriers no longer meet the RSPA definition for "Commuters."

Table 3
Accidents, Fatalities and Rates
U.S. Air Carriers Operating Under 14 CFR 135
Nonscheduled Operations*
(On-demand Air Taxis)
1981-1991

	Accidents		Fatalities		Aircraft	Accident Rates Per 100,000 Aircraft Hours	
Year	Total	Fatal	Total	Aboard	Hours Flown#	Total	Fatal
1981	157	40	94	92	2,895,827	5,42	1.38
1982	132	31	72	72	3,256,763	4.05	0.95
1983	141	27	62	57	2,574,883	5.48	1.05
1984	146	23	52	52	3,079,007	4.47	0.75
1985	152	35	76	75	2,782,696	5.46	1.26
1986	116	31	65	61	2,913,358	3.98	1.06
1987	97	30	65	63	2,877,002	3.37	1.04
1988	97	27	58	54	2,841,717	3.41	0.95
1989	107	25	83	81	3,270,139	3.27	0.76
1990P	107	29	50		3,170,000	3.38	0.91
1991P	84	26	69		3,270,000	2.57	0.80

P Preliminary data.
\# Source of estimate: FAA.
* Accidents on non-U.S. soil and in non-U.S. waters are excluded.

Table 4
Accidents, Fatalities and Rates
U.S. General Aviation*
1981-1991

	Accidents		Fatalities		Aircraft	Accident Rates Per 100,000 Aircraft Hours	
Year	Total	Fatal	Total	Aboard	Hours Flown#	Total	Fatal
1981	3,500	654	1,282	1,261	36,803,000	9.51	1.78
1982	3,233	591	1,187	1,171	32,095,000	10.06	1.85
1983	3,075	555	1,064	1,057	31,048,000	9.90	1.79
1984	3,011	543	1,039	1,018	31,510,000	9.55	1.72
1985	2,737	497	951	940	30,590,000	8.94	1.62
1986	2,576	473	965	876	29,317,000	8.79	1.61
1987	2,464	431	807	791	29,208,000	8.43	1.47
1988	2,369	454	789	781	29,634,000	7.99	1.53
1989	2,216	424	759	754	30,234,000	7.32	1.40
1900P	2,187	435	745		30,886,000	7.08	1.41
1991P	2,143	414	746		30,760,000	6.90	1.35

P Preliminary data.

\# Source of estimate: FAA.

* All operations other than those conducted under 14 CFR 121 or 14 CFR 135. Accidents on non-U.S. soil and in non-U.S. waters are excluded.

Suicide and sabotage accidents excluded from rates as follows:

Total -	1982 (3),	1983 (1),	1984 (3),	1985 (3),	1987 (1),	1988 (1),	1989 (3)
Fatal -			1984 (2),	1985 (2),	1987 (1),		1989 (2)

Table 5
Takeoff and Landing
Fatal Accidents and Fatalities
U.S. Air Carriers Operating Under 14 CFR 121
(Airlines Operating Large Aircraft)
1987-1991

					Fatalities				Total	
Date	Location	Operator	Service	Aircraft	Psgr	Crew	Other	Total	Aboard	Reported Type of Accident
2/1/91	Los Angeles, Calif., U.S.	USAir	Psgr	B-737-300	20	2	12	34	99	Collided with a Fairchild SA-227 on runway after landing.
3/3/91	Colorado Springs, Colo., U.S.	United	Psgr	B-737-291	20	5	0	25	25	Crashed out of control on approach.
1/18/90	Atlanta, Ga., U.S.	Eastern	Psgr	B-727-231	0	0	1	1	158	Runway collision with a general aviation aircraft during landing.
12/03/90	Detroit, Mich., U.S.	Northwest	Psgr	M/D DC-9-10	7	1	0	8	42	Runway collision in fog. One aircraft taking off and one taxiing.
		Northwest	Psgr	B-727	0	0	0	0	156	
7/19/89	Sioux City, Iowa, U.S.	United	Psgr	M/D DC-10	110	1	0	111	296	Crashed during emergency landing after loss of engine and hydraulic system.
9/20/89	Flushing, N.Y., U.S.	USAir	Psgr	B-737-400	2	0	0	2	63	Aircraft crashed at the end of the runway following an aborted takeoff.
8/31/88	Dallas, Texas, U.S.	Delta	Psgr	B-727-232	12	2	0	14	108	Crashed shortly after takeoff.
8/16/87	Romulus, Mich., U.S.	Northwest	Psgr	DC-9-82	148	6	2	156	155	Crashed onto freeway shortly after takeoff.
11/15/87	Denver, Colo., U.S.	Continental	Psgr	DC-9-10	25	3	0	28	82	Crashed while taking off during snow storm.

Source: NTSB

The first airline fatal accident in 1991 involving passenger service occurred February 1, when a landing jet transport aircraft collided with a commuter aircraft about to take off at Los Angeles Airport, Calif., fatally injuring 22 people aboard the jetliner and another 12 aboard the commuter aircraft. Seventy-seven passengers and crew members aboard the jetliner survived. No one on the commuter aircraft survived.

The year's only other fatal accident involving passengers occurred March 3, when a jetliner crashed on final approach to Colorado Springs, Colorado. All 20 passengers and five crew members aboard were killed. This was the first non-survivable fatal accident since 1987 involving U.S. airline jet transport aircraft that crashed during takeoff or landing.

Table 5 lists nine takeoff or landing fatal accidents involving airline jet transport aircraft operating passenger service from 1987-1991. Although there were no survivors in one accident, many passengers survived in the other fatal accidents. In the survivable accidents, 1,004 persons aboard jet transport aircraft involved survived and 185 were fatally injured. The remaining 819 aboard survived, indicating a survival rate as high as 82 percent.

In 1990, U.S. commuter air carriers were involved in 22 accidents, eight of which were fatal, resulting in 77 fatalities. This was the worst safety record for commuter air carriers in terms of fatalities. (Table 2). The 77 fatalities represent the highest number of deaths recorded for the commuter industry in a single calendar year.

Compared to the survivability of large jet transport aircraft, the chances of survival for people aboard aircraft used by commuter air carriers in a fatal crash are much smaller. Table 6 shows takeoff and landing fatal accidents involving commuter air carriers in passenger service. For the same five-year period, commuter air

Table 6
Takeoff and Landing
Fatal Accidents and Fatalities
U.S. Air Carriers Operating Under 14 CFR 135
All Scheduled Service
(Commuter Air Carriers)
1987-1991

Date	Location	Operator	Service	Aircraft	Fatalities Psgr	Crew	Other	Total	Total Aboard	Reported Type of Accident
2/1/91	Los Angeles, Calif., U.S.	Skywest	Psgr	Fairchild	10	2	22	34	12	Struck by a landing B-737 while awaiting takeoff clearance on active runway.
3/18/91	Treasure Cay, Bahamas	Aero Coach	Psgr	Cessna 402C	4	1	0	5	5	Crashed on approach
4/5/91	Brunswick, Ga., U.S.	Atlantic Southeast Airlines	Psgr	Embraer EMB-120 RT	20	3	0	23	23	Crashed on approach
7/10/91	Birmingham Ala., U.S.	Le'Express Airlines	Psgr	Beechcraft C99	12	1	0	13	15	Crashed on approach
12/26/89	Pasco, Wash., U.S.	United Express	Psgr	British Aerospace Jetstream 31	4	2	0	6	6	Crashed during approach.
1/19/88	Bayfield, Colo., U.S.	Trans-Colorado	Psgr	Fairchild-Swearingen SA-227AC	7	2	0	9	17	Crashed during an instrument approach.
2/19/88	Cary, N.C., U.S.	American Eagle	Psgr	Fairchild-Swearingen SA-227AC	10	2	0	12	12	Crashed shortly after takeoff.
3/4/87	Detroit, Mich., U.S.	Northwest	Psgr	Casa C-212-CC	7	2	0	9	19	Crashed and burned during landing.
11/23/87	Homer, Ark., U.S.	Ryan Air Service	Psgr	Beech BE-1900C	16	2	0	18	21	Crashed on landing, 200 yards short of runway.
12/22/87	Chadron, Neb., U.S.	Regional Express	Psgr	Cessna 402C	0	2	0	2	3	Collided with trees during landing approach.

Source: NTSB

carriers were involved in 10 takeoff and landing fatal accidents. Six of them were non-survivable. Of the fatal accidents with survivors, only 20 of the 59 aboard the aircraft survived. That yields a survival rate of 33 percent. Compared to the airlines, the survival rate is 49 percent worse for commuter air carrier accidents.

On-demand air taxis in 1991 recorded a total of 84 accidents, 26 of which were fatal, accounting for 69 fatalities, compared to 107 accidents and 50 fatalities in 1990. The 84 accidents reported to the NTSB in 1991 was the lowest number of total accidents since the board began compiling air taxi records in 1975 (Table 3).

General aviation safety continued to improve in 1991. The NTSB reported that the 2,143 accidents and 746 fatal accidents recorded in 1991 for general aviation were the lowest accident totals since the agency began compiling general aviation records in the 1960s (Table 4).♦

Reports Received at FSF Jerry Lederer Aviation Safety Library

Reference

Updated Reference Materials (Advisory Circulars, U.S. Federal Aviation Administration)

Title	*Mo/Yr*	*Subject*
AC 23.1419-2	Jan 1992	Certification of Part 23 Airlines for Flight in Icing Conditions (Cancels AC 23.1419-1 dated September 2, 1986)
AC 120-45A	Feb 1992	Airplane Flight Training Device Qualification (Cancels AC 120-45 dated May 11, 1987)

Reports

FAA Vertical Flight Research, Engineering, and Development Bibliography, 1962-1991. Bibliography / Robert D. Smith (Vertical Flight Program Office, U.S. Federal Aviation Administration). Washington, D.C. : U.S. Federal Aviation Administration, Vertical Flight Program Office; Washington, D.C. : Available through the National Technical Information Service*, [March, 1992]. Report No. DOT/FAA/RD-92/1. 368 pp.: indexes, abstracts.

Key Words
1. Helicopter — Bibliography.
2. Heliport — Bibliography.
3. Rotorcraft.
4. Bibliography.
5. Tiltrotor.
6. Vertiport.
7. Powered-Lift Vehicles.

Summary: This is a bibliography of U.S. Federal Aviation Administration vertical flight research and development reports published from

1962 to 1991. Reports may be found through the chronological, subject, alphabetical or author indexes for quick identification of specific documents of interest. The bibliography includes both an acronym list and a chronological listing of abstracts from roughly 300 research and development reports. This research aid indexes reports covering various vertical flight topics including engineering, research and design, and vertical-flight craft safety. Helicopters, tiltrotor and tiltwing vehicles are covered as well as heliports and vertiports. The intended audience includes persons within the FAA, industry, and in state and local governments.

Design Standards for an Aircraft Rescue and Firefighting Training Facility. Washington, D.C.: U.S. Dept. of Transportation, Federal Aviation Administration, [1992]. Advisory circular 150/5220-17A. (loose-leaf); 38 p. : ill.

Key Words
1. United States. Federal Aviation Administration — Handbooks, manuals, etc.
2. Airplanes — Fires and fire prevention — Handbooks, manuals, etc.
3. Airlines — Employees — Training of — United States — Handbooks, manuals, etc.

Summary: This advisory circular cancels 150/5220-17 dated April 1, 1988, and contains updated information on standards, specifications, and recommendations for the design of an aircraft rescue and firefighting training facility. The circular offers planning suggestions for design, site selection and fuel storage. Training facility components are covered as well as construction and materials. An appendix of publications on construction standards and a listing of related reading materials are also included.

A Candidate Automated Test Battery for Neuropsychological Screening of Airmen : Design and Preliminary Validation / Robert D. O'Donnell, Jerry R. Hordinsky, [et al.]. Washington, D.C. : U.S. Federal Aviation Administration, Office of Aviation Medicine ; Springfield, Va., U.S. : Available through the National Technical Information Service*, [1992]. Report No. DOT/FAA/AM-92/11, Contract No. DTFA-02-87-C-87070. 13 p.

Key Words
1. Air pilots — Psychology.
2. Air pilots — Medical examinations.
3. Neurological screening.
4. Psychiatric screening.
5. Cognitive impairments.

Summary: A panel of the American Medical Association convened by the U.S. Federal Aviation Administration recommended the development of a computerized test of cognitive functions to detect cognitive impairments that might go unnoticed during a routine physical examination. A computerized test battery, based on current cognitive theory, was developed to provide a brief screening for disturbances in higher-level cognitive functions. This battery is not intended to replace traditional observational methods but, rather, to augment them. The test results provide the examiner with a verbal protocol documenting a set of "rule out" recommendations for further diagnostic testing. The report provides the background and composition of the test battery, and the results of two initial studies are disclosed. Conclusions, recommendations and references are also included. [Modified author abstract]

Rotorwash Computer Model User's Guide / Samuel W. Ferguson, J. David Kocurek. Washington, D.C. : U.S. Federal Aviation Administration, Research and Development Service ; Springfield, Va., U.S. : Available through the National Technical Information Service*, [1992]. Report No. DOT/FAA/RD-90/25, Contract No. DTRS57-87-P-81048. 153 p. in various pagings. : ill.

Key Words
1. Helicopters — Aerodynamics.
2. Vertically rising aircraft — Aerodynamics.
3. Aeronautics — Accidents.
4. ROTWASH (computer program) — Handbooks, manuals.
5. Rotor Downwash.

Summary: This report is a user's guide for the Rotorwash (ROTWASH) Analysis program. The computer program is used to analyze the rotorwash flow field characteristics and their effect on the environment for rotorcraft in hovering and low speed flight in close proximity to the ground. The documentation provides step-by-step descriptions on the use of each analysis option and a listing of the IBM PC/PC compatible based Fortran-77 software. A brief introductory section to the report describes the history of the ROTWASH analysis software. References for the mathematical models used in the analysis modules and an appendix on Rotorcraft design data in ROTWASH format are also included. [Modified author abstract]

Exposures from Headset Interference Tones / Noal D. May. Washington, D.C. : U.S. Department of Transportation, Federal Aviation Administration, Office of Aviation Medicine ; Springfield, Va., U.S. : Available through the National Technical Information Service*, [1992]. Report No. DOT/FAA/AM-92/4. 16 p. : charts.

Key Words
1. Hearing levels — Evaluations.
2. Air traffic controllers.
3. Aviation medicine.
4. Auditory adaptation.
5. Hearing threshold shifts.
6. Hearing interference tones.
7. Insert type headset.

Summary: This report is based on the study of interference tone as experienced by FAA Air Traffic Control Specialists (ATCSs) and pilots who wear headsets with insert-type ear pieces. The study evaluated the acoustic characteristics of the interference tones and measured the Sound Pressure Levels (SPLs) of generated tones through pilot and ATCS headsets. The SPLs were compared within and between four frequencies (.5, 1, 2, and 3 KHz) over ten discrete signal power levels. The effects of simulated ATCS interference tone exposure were studied to evaluate the potential of temporary threshold shifts (TTSs) in hearing threshold levels (HTLs). Results of a laboratory study indicate TTSs could not be detected following an ample response time (5 seconds) for removing the headset insert-type ear piece. Shifts were detected, however, following 60 and 145 seconds at the 1 KHz and 2 KHz levels, but these levels are well within the current Occupational Safety and Health Administration (OSHA) promulgated Noise Standard (29 CFR 1910.95) for continuous noise exposures. [Modified author abstract and conclusion]

Air Traffic Control : Challenges Facing FAA's Modernization Program : Statement of Kenneth M. Mead, director, Transportation Issues, Resources, Community and Economic Development Division, U.S. General Accounting Office, before the Subcommittee on Aviation, Committee on Public Works and Transportation, U.S. House of Representatives / United States General Accounting Office. Washington, D.C. : U.S. General Accounting Office**, [1992]. Report GAO/T-RCED-92-34. 11 p.

Key Words
1. United States — Federal Aviation Administration — Auditing.
2. United States — Federal Aviation Administration — Procurement.
3. Air traffic control — United States — Automation — Evaluation.
4. Air traffic control — United States — Planning — Evaluation.

Summary: Director Mead's testimony addresses the U.S. Federal Aviation Administration (FAA) facilities and equipment reauthorization to fund the agency's air traffic control (ATC) modernization program called the Capital Investment Plan (CIP). The testimony covers four major points: cost increases, schedule delays and performance problems; initiation of projects to sustain the ATC system because of delays in modernization; initiation of major reforms in the modernization program; and, formulation of plans to consolidate ATC facilities and apply satellite technology to the ATC system. Mead notes that while acquisition problems pose a continuing challenge, the FAA has taken some important steps in reforming its acquisition process in order the minimize continuing

cost increases, schedule delays, and performance problems in key ATC modernization projects. Mead said that FAA needs to follow through with its acquisition reforms to prevent new projects from experiencing the same problems. [Modified summary from testimony]

Aviation Safety : Better Oversight Would Reduce the Risk of Air Taxi Accidents : Statement of John H. Anderson Jr., associate director, Transportation Issues Resources, Community, and Economic Division, U.S. General Accounting Office, before the Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation, U.S. House of Representatives / United States General Accounting Office. Washington, D.C. : U.S. General Accounting Office**, [1992]. Report No. GAO/T-RCED-92-27. p. 11.

Key Words
1. Airlines — Safety regulations — United States — Evaluation.
2. Aeronautics — United States — Accidents.
3. Airplanes — United States — Maintenance and repair.
4. Airplanes — United States — Inspection.
5. United States — Federal Aviation Administration.

Summary: Associate Director Anderson's testimony summarizes findings from reports (GAO/RCED-92-60, Jan. 21, 1992, and GAO/RECD-92-10, Oct. 17, 1991) on oversight of air taxis and FAA's actions leading to the emergency revocation of airline operating certificates. His testimony also covers concerns with FAA's overall inspection program that affect the agency's oversight of air taxis. Anderson said that the FAA cannot ascertain whether all air taxis operate safely in compliance with regulations because, in fiscal year 1990, it did not perform required inspections on all air taxis and because FAA's routine inspections have had limited effectiveness in discovering safety violations. Moreover, Anderson states, even though air taxis are required to register with the Office of the Secretary of Transportation (OST) and must meet liability insurance requirements, they are exempt from certification and the related economic fitness reviews that all air carriers and some commuters must undergo. In some cases, according to Anderson, air taxi operators' financial distress and a poor compliance attitude also contributed to safety violations. [Modified summary from testimony]

Airport Development: Improvement Needed in Federal Planning : Statement of Kenneth M. Mead, director, Transportation Issues, Resources, Community and Economic Development Division, U.S. General Accounting Office, before the Subcommittee on Aviation, Committee on Public Works and Transportation, U.S. House of Representatives / United States General Accounting Office. Washington, D.C. : U.S. General Accounting Office**, [1992]. Report GAO/T-RCED-92-30. 8 p. : chart.

Key Words
1. Airports — United States — Planning.
2. Airports — United States — Finance.
3. National Plan of Integrated Airport Systems (NPIAS).
4. FAA — NPIAS.

Summary: In fiscal year 1992, FAA is authorized to grant $1.9 billion from the Airport and Airway Trust Fund for airport development projects to enhance the safety and capacity of the national airport system. Director Mead said that although the FAA's current National Plan of Integrated Airport Systems provides an extensive listing of airport needs, it is not an effective national plan; it establishes no objectives, offers no opinions, and does not provide for self assessment. Mead offers guidelines and suggestions for the advantageous use of limited trust funds. The testimony also gives a brief background and history of the NPIAS. [Modified summary from testimony]

Aviation Safety : FAA Needs to More Aggressively Manage its Inspection Program : Statement of Kenneth M. Mead, director, Transportation Issues, Resources, Community and Economic Development Division, U.S. General Accounting Office, before the Subcommittee on Aviation, Committee on Public Works and Trans-

portation, U.S. House of Representatives / United States General Accounting Office.-Washington, D.C. : U.S. General Accounting Office**,

[1992]. Report GAO/T-RCED-92-25. 15 p. ; 28 cm.

Key Words

1. Airplanes — United States — Maintenance and repair.
2. Airplanes — United States — Inspection.
3. United States — Federal Aviation Administration.

Summary: Director Mead addresses concerns with FAA's airline inspection management and oversight programs. In Mead's view, FAA cannot provide sufficient assurance of airline safety and regulatory compliance because FAA did not perform required inspections of all airlines; does not follow up to determine whether airlines take corrective action on identified problems; does not know how much time inspectors are spending on inspections; and, does not target inspection resources on the basis of airline risk. Mead acknowledges that the FAA has taken positive steps toward correcting gaps in the inspection and oversight process but he feels that the FAA must act to correct these problems before it is overtaken by newer challenges. [Modified summary from testimony]♦

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Accident/Incident Briefs

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

Exposure to Hypoxia Has Tragic End

McDonnell Douglas DC-9-30: No damage. Fatal injuries to one.

The cabin of the DC-9-30 failed to pressurize during the initial climb. The copilot, who was flying the aircraft, began to level off at 16,000 feet but the pilot ordered him to continue the ascent to the assigned altitude of Flight Level (FL) 330. As the copilot reluctantly complied, the pilot took a portable oxygen supply and went aft to locate the problem.

The pilot's oxygen bottle had a 15-minute supply of oxygen. When he did not return to the cockpit after that time, the copilot tried to signal him and descended to 13,000 feet. After approximately 30 more minutes had passed, the copilot left the cockpit and found the pilot unconscious in the forward cargo area with the oxygen mask on his face. The pilot's foot was entangled in a cargo net that covered a pallet. The copilot returned to the cockpit, declared an emergency and landed the aircraft.

The pilot was dead, with death attributed to hypoxia. Investigation revealed that the aft pressure bulkhead had been removed for maintenance prior to the flight and had not been re-installed. The portable oxygen system was found to be full, indicating that the pilot made little or no use of it. The unit functioned normally when tested.

Ice Accumulation Forces Windmill Re-start

Boeing 757-200: No damage. No injuries.

The aircraft experienced a rundown of both engines as it descended in icing conditions through 18,000 feet at about 250 knots in an area of moderate to heavy rain. The airplane had been in icing conditions since beginning the descent from 35,000 feet. The true air temperature (TAT) was below 10 degrees centigrade and visible moisture was present. The engine anti-ice system was off, continuous ignition was on, and thrust levers and tachometer rpm indications were at idle.

Immediately after completing an air traffic control (ATC)-assigned heading change, the pilot reported encountering heavy rain. A faint odor of jet fuel was detected, immediately followed by the engine-driven generators cycling off, on and then off again. Assuming that both generators had failed, the crew attempted to start the auxiliary power unit (APU), but were unsuccessful on the first try. The pilot flying observed no engine response to thrust lever movement during an attempted level off at an assigned altitude of 14,000 feet. The pilot then lowered the nose slightly to attain an airspeed of approximately 270 knots. The start switches were placed to FLT and the fuel control switches were cycled to CUTOFF and then RUN. Both engines were windmill started at about 12,000 feet and the aircraft was able to make an uneventful landing.

After landing, both engines were inspected and run. No malfunctions were found. Fuel samples

were tested and also found to be normal. The aircraft was returned to service and no further operational anomalies were reported. Review of the flight data recorder indicated that the TAT at the time of the rundown on both engines was plus four degrees centigrade. Preliminary indications suggested that the stall and rundown of both engines with the anti-ice off may have been caused by ice accumulation.

According to aircraft flight manual limitations, the engine anti-ice system should be on whenever TAT inflight is 10 degrees centigrade or below and visible moisture in any form is present.

Vertigo During Checkride Blamed for Fatal Crash

Hawker Siddeley HS 748: Aircraft destroyed. Fatal injuries to two.

The check pilot, in the right seat, was evaluating a copilot for an upgrade to pilot. Conditions were dark and rainy during the late winter afternoon.

The aircraft was cleared for a right turn after takeoff. It entered an overcast at 300 feet above ground level (agl) and began a steep right turn. According to flight data recorder information, the aircraft reached a maximum altitude of 423 feet agl and began to descend. It made ground contact in an open field but continued to fly for almost a mile before it collided with a tree and crashed in a wooded area.

The cockpit voice recorder indicated that the check pilot had been giving information to the copilot about the departure during the initial climbout. The accident inquiry determined that the copilot had experienced vertigo, and discovered information that indicated that the copilot had previously demonstrated difficulty with instrument flight because of disorientation, narrow focus of attention or lack of instrument scan (instrument fixation), especially during periods of high workload, during several training flights and two check flights.

White-out Leads to Hard Landing

Cessna 185: Substantial damage. Minor injuries to four.

The aircraft, with a pilot and three passengers on board, was on a winter afternoon charter flight. The ground was extensively covered with snow and the aircraft was equipped with skis.

The pilot reported deteriorating winter weather approximately 29 miles from his intended destination. When the conditions continued to worsen, he decided to make a precautionary landing on a nearby frozen lake. During the final portion of the approach, the pilot encountered a white-out condition and lost adequate visual cues.

The landing was hard and both main gear collapsed. The aircraft sustained substantial damage to the propeller, windshield, engine, wing struts and the left ski. The pilot and three passengers were able to evacuate the aircraft with minor injuries.

Bounced Landing Bends Props

Piper PA-34 Seneca: Moderate damage. No injuries.

The runway was slightly less than 3,400 feet long but it was hard-surfaced and dry. Winds were light and variable.

The pilot of the twin-engine aircraft had one passenger aboard. After making a visual approach, the pilot experienced some difficulty during touchdown and the aircraft bounced three or four times before it was stopped. The pilot noticed no apparent damage to the aircraft and taxied it to its destination on the airport where the passenger deplaned.

While the aircraft was being moved into a parking location, the tips of both propellers were found to be bent. Closer inspection by maintenance personnel revealed that the front main bearings of both engines had also been damaged and required replacement.

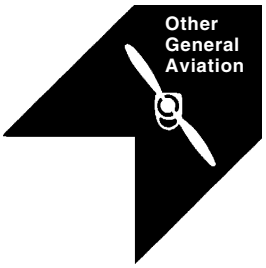
Repeat Gear Problem Not Heeded

Piper PA-31: Substantial damage. Minor injuries to three.

The pilot of the twin-engine aircraft was unable to obtain a gear down and locked indication for the left main gear down during the approach to landing. He cycled the gear several times and completed the emergency extension procedure using the hand pump, also without obtaining a safe gear-down indication.

Ground observers confirmed that the gear appeared to be extended during a low fly-by and the pilot decided to land. Touchdown was without incident and the rollout was uneventful until the aircraft had rolled approximately 2,500 feet along the runway — when the left main gear collapsed. The aircraft sustained damage to the left flap, the left propeller blades were curled and the wing tip was scraped. The pilot and two passengers evacuated the aircraft without injury.

The pilot reported that the left main gear downlock failed, allowing the gear to retract near the end of the landing roll. He also stated that it had been necessary to cycle the gear on a previous landing to obtain proper gear down and locked indication for the right main gear position.



Damaged Aircraft Has Short Flight

Taylorcraft BC-12D: Substantial damage. Serious injuries to one.

The pilot was returning his aircraft from an airport to his private farm strip. After an unusually short ground roll, the aircraft became airborne in an exaggerated nose-high attitude. The aircraft climbed to approximately 100 feet agl (above ground level) and was observed to make a series of nose-high turns before entering a descending left turn and crashing 600 feet from the airport.

The aircraft was damaged substantially and the pilot was seriously injured. An investigation determined that the aircraft had been damaged earlier the same day after directional control was lost on landing at the airport where the takeoff subsequently occurred. During the arrival landing, the pilot had lost directional control and the aircraft veered off the runway. It struck a hangar support structure with its left wing with enough force to compress a foot-long area at the midpoint of the left wing, from the leading edge back to the main spar. The wing also had been was displaced half an inch at its root by the force of impact.

Although the pilot was advised not to fly the aircraft in that condition, he checked the damaged area, started the engine by hand and took off with no further preflight inspection.

The accident investigation revealed that the elevator trim tab was in the full nose-up position. In addition, the elevator trim cable was off the forward drive pulley, a condition that likely existed before the flight, according to investigators. The right mechanical brake cable was also found to be disconnected. An exami-

nation of the aircraft's records indicated that the certificate of airworthiness had expired 16 years prior to the accident.

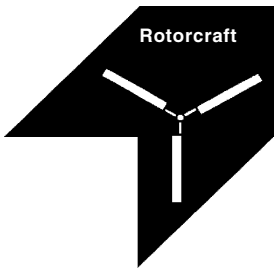
Third Time Around Not a Charm

Beagle B121: Substantial damage. No injuries.

A student pilot was being instructed in pattern and landing procedures in 15-knot winds gusting to 25 knots. After completing several approaches with power, the student was given a simulated engine failure on the downwind leg to practice power-off gliding approaches.

The student was unsuccessful in landing on the first and a subsequent approach because of poor positioning. The instructor judged the third approach to be marginally acceptable and allowed the student to continue it while closely monitoring the airspeed, which remained above 70 knots until the roundout.

During the landing flare, a high sink rate developed and the instructor was unable to intervene in time to prevent a hard landing. Although the aircraft contacted the runway in a normal attitude, the right landing gear leg partially collapsed on impact. The instructor attributed the accident to a combination of factors, including an unfamiliar airfield, a poorly executed roundout and the presence of wind shear.



Height Not Maintained Over Water

Sikorsky S-70C: Aircraft destroyed. Fatal injuries to one.

The aircraft was on a law enforcement mission over the ocean. It was evening and dark. The sky was overcast at 1,000 feet and there was no visible horizon.

After takeoff, the pilot noticed that his radar altimeter was not functioning. The mission was continued, however, because the copilot's radar altimeter was operating normally. The copilot operated the searchlight and was directed to monitor the instruments. While the pilot was maneuvering the helicopter to keep a boat in view, the aircraft began descending and struck the water. The cabin immediately filled with water. The pilot was able to evacuate successfully but the copilot drowned.

Windsock Snares Rotor

Bell 206B Jet Ranger: Substantial damage. No injuries.

During aerial application operations, the pilot landed the Jet Ranger near a fuel truck parked along a lake shore in light and variable winds. The purpose of the stop was to refuel the aircraft; the rotors would be left turning to save time during the turnaround.

At touchdown, a windsock mounted on the fuel truck was blowing away from the aircraft. The aircraft's throttle was retarded to flight idle after landing. Shortly after the landing, the windsock changed direction by 180 degrees. One of the main rotor blades struck the fabric of the windsock, which was dragged, along with its mounting pole, into the rotor disc. The impact cracked the tip of one of the rotor blades, which had to be replaced. ♦