

APPENDIX F—DERIVATION OF BOMBING STATISTICS TABLES

Chapters 1, 11, and VI contain a number of tables summarizing the current and projected bombing threat. These tables were compiled from data originating from a number of sources, including BATF, the FBI, FAA, and a number of other law enforcement agencies.

BATF and the FBI compile overall bombing statistics. The data, however, are available only in the form of periodic summary documents (semiannually from BATF and quarterly from the FBI) in compiled, tabular form, or in the form of individual case files. Both data banks are computerized, but the formatting does not make it possible to retrieve and analyze the data in a meaningful way. Management Sciences Associates had previously attempted an analysis of the BATF and FBI data bases as reported in reference F-1, and had been unsuccessful in retrieving the data in a manner which allowed meaningful analysis. OTA reviewed the BATF case file data, and concluded that analysis of the raw data files was not feasible, for the following reasons:

- the files did not contain all the data needed for the OTA analysis;
- files concerning cases currently before the courts could not be made available to OTA;
- the amount of effort necessary to analyze the individual data files was not commensurate with the time and funds available for the OTA analysis.

OTA conducted a similar, although less intensive, review of the FBI data files and concluded that detailed analysis of the FBI files would have the same limitations as cited above for the BATF files; in addition, fewer bombing incidents are contained in the FBI file.

The OTA analysis was therefore based primarily on the compiled summary reports. OTA had no reason to suppose that the data from any of these Government sources were more or less reliable than the others, and so made use in each case of the data source whose formatting was most appropriate for the analysis in question.

In this appendix, the original tabular data from the FBI, BATF, and FAA are shown, and the way in which the tables in chapter VI were compiled from these sources is explained. The tables in chapters I and 11 were derived in turn from the chapter VI tables.

Table 54

The BATF data in table 54 are taken directly from tables 1 and 9 of the BATF 1978 Explosives Incidents Report, (ref. F-2) reproduced below. The first five rows come from table 1, the last three from table 9. The FBI data comes from table 1 of the 1978 FBI Bomb Summary, (ref. F-3) also reproduced below.

Table 9 of the *BATF 1978 Explosives Incidents Report* shows 435 injuries in 1978. This includes 250 fireworks accidents (listed as "unknown targets"), and OTA therefore reduced the figure to 185 injuries from bombings.

Table 55

The explosive trend data in table 55 are also from the same FBI table 1. The only differences are that a column of total explosive bombings and attempts has been added and the property damage values have been rounded off to the nearest thousand dollars.

Similarly, figure 22 shows the same data in a graphical format,

Table 56

Table 56, on the determination of the explosive filler used in criminal bombs, comes from two BATF sources. The 1978 "all identified fillers" data are based on table 13 of the 1978 BATF report (ref. 2). A total of 1,767 cases is shown for 1978 in that table. This represents all of the explosive and incendiary bombings, criminal accidents, and unignited and undetonated actual bombs recovered during 1978, as shown by the first five rows of table 1 of the 1978 BATF report (ref. F-2). If those fillers which were not identified and the flammable liquids categories are removed, the number of cases involving identified, explosive fillers from actual explosive bombings, recovered explosive bombs, and criminal accidents are 824. If the 1978 numbers for each type filler is divided by 824, then the percentages shown are found (rounded off to the nearest percent). The BATF category called "dynamite" includes dynamites, gels, slurries, and emulsions. The 1978 laboratory identified filler data are taken from page 43 of the BATF Annual Report for FY 78

(ref. F-4). The “average” column is just arithmetic average of the other two columns. OTA believes these data give as accurate a feeling for the percentage of bombings for each filler type as can be derived, short of a case-by-case examination.

Table 57

The data shown in table 57 are derived from two BATF sources. The total number of bombings against substantial targets was derived from table 9 of the 1978 BATF report (ref. F-2). The table shows 1,409 incidents, which corresponds to the number of actual explosive and incendiary bombings during 1978 plus the number of criminal accidents, due to premature initiation, from table 1 of that report. From that was subtracted the number of bombings against unknown targets, mailboxes, and open areas, from BATF table 9, to yield 1,298 bombings against substantial targets. The breakout between incendiary and explosive bombings was also obtained from data in BATF tables 1 and 9. Table 1 shows 896 explosive bombings (67 percent) and 446 incendiary bombings (33 percent). If the criminal accidents from the use of explosive and incendiary bombs are assumed to have occurred with the same relative frequency, then the total number of incendiary bombings and criminal accidents against substantial targets is equal to 33 percent of the 1,298 figure, or 428, while the number for explosive bombings is equal to 870.

The breakout of number of explosive bombings by type of filler was arrived at by using the percentage filler data from column 3 of table 56 and multiplying the percentage for each category by the total number of explosive bombings of substantial target figures given above.

Neither the FBI nor the BATF data summaries break down deaths and injuries by the type of bomb filler used. However, A. Atley Peterson, Special Assistant (Research and Development) to the Director of BATF, gave a breakdown of deaths, injuries, and property damage by type of bomb filler before the 4th International Conference on Terrorist Devices and Methods in England during May 1979 (ref. F-5). These data are shown in table 57. Peterson's figure for total injuries, like OTA's table 54, excludes 250 injuries from fireworks accidents, which are included in table 9 of reference F-2.

The row entitled “total for those fillers which would be directly tagged” aggregates figures for black powder, smokeless powder, and cap-sensitive

dynamite, gels, slurries, and emulsions, corresponding to BATF planning documents and also to the OTA baseline case.

Table 58

Table 58 is BATF table 9 (ref. F-2) slightly modified. The words “property damage” were added to footnote a. Also, the number injured in 1978 from bombings of “unknown” targets was reduced to exclude 250 injuries from fireworks accidents.

Table 59

Table 59 is an OTA compilation based on BATF table 9 (ref. F-27). The percentage data are based on the average of the 1977 and 1978 bombings. The statistics for residences and vehicles and for commercial establishment come directly from that table. To get the percentage of identified substantial targets unlikely to be protected by a detection sensor, the unknown, other, mailbox, and open area bombings were removed from the data. That left 1,189 bombings of substantial targets (i.e., eliminating open area and mailbox bombings) in 1977 and 1,161 in 1978 in which the target was identified. It was then assumed that residences, vehicles, and commercial establishments would be unlikely to be protected by a detection sensor, while the other target categories might well be.

Table 60

Table 60 is an OTA-generated categorization of criminal bomber attributes.

Table 61

Table 61 was generated by the following process. First, a calculation was made of the proportion of bombings attributable to various types of bombers. This calculation was made by taking FBI data on apparent motives for the year 1974 (p. 9 of the FBI Bomb Summary 1974, ref. F-6), 1975 (p. 16 of the FBI Bomb Summary 1975, ref. F-7), 1976 (table 9 of the FBI Bomb Summary 1976, ref. F-8), 1977 (table 9 of the FBI Bomb Summary 1977, ref. F-9), and 1978 (table 8 of the FBI Bomb Summary 1978, ref. F-3) and averaging them. The FBI used different categories in each year, and they were combined into the four OTA categories as shown in the tabulation below:

	1974	1975	1976	1977	1978
Terrorist category					
Antiestablishment	✓	✓	✓		
Extremist	✓	✓	✓		
Foreign political	✓	✓	✓		
Political	✓	✓	✓		
Antireligious	✓	✓	✓		
Civil rights	✓	✓	✓		
Protest				✓	✓
Publicity				✓	✓
Sabotage				✓	✓
Subversion				✓	✓
Criminal category					
Labor	✓	✓	✓		
Racketeering	✓	✓	✓		
Monetary gain	✓	✓	✓		
Extortion				✓	✓
Fraud				✓	✓
Intimidation				✓	✓
Diversion				✓	✓
Mentally disturbed					
Animosity	✓	✓	✓	✓	✓
Suicide	✓				
Reprisals				✓	✓
Revenge				✓	✓
Vandals and experimenters					
Malicious destruction	✓	✓	✓		
Mischief				✓	✓
Vandalism				✓	✓

From the average for these 5 years, a calculation was made of the proportion of all bombings committed by each type of perpetrator: terrorists 12 percent; criminals 11 percent; mentally disturbed 38 percent; and vandals and experimenters 39 percent. The assumption was made that these proportions, calculated from bombings in which a motive had been attributed, apply also to those bombings where no motive is assigned by a law enforcement agency. The average number of actual explosive bombings for that 5-year period, taken from table 1 of the *FBI Bomb Summary 1978*, was then multiplied by these proportions to yield the data in table 61.

OTA feels that the 5-year average is more appropriate than presenting year-by-year trends as the FBI categories have changed over that period, with a substantial revision apparent between 1976 and 1977. In addition, the percentage of bombings to which the FBI assigns a motivation has changed drastically over that period. In 1974, 96 percent of the bombings were attributed, while only 33 percent were attributed in 1978.

Table 62

Table 62 is taken directly from BATF tables 17 and 23 (ref. F-2), except that the BATF categories of TNT and dynamite were combined in the category "cap-sensitive high explosives," and RDX is included in the military explosives category.

Table 63

Table 63, on methods of entry for explosive theft, is simply BATF table 18 (ref. F-2). The first footnote has been slightly modified.

Tables 64,65,66,67

Tables 64, 65, 66, and 67 are taken directly from an FAA document FAA-RD-77-28 (ref. F-10). Table 64 is table 4 of the FAA report; table 65 is table 5 of that report; table 66 is table 7 of that report; and table 67 is table 15 of the FAA report. The only change in the tables occurs in table 66. Footnote a indicates that the identification of the explosive used in the LaGuardia bombing as dynamite and RDX is an FAA estimate; other agencies have offered different opinions.

Table 68

The premature detonation statistics in table 68 are from the 1974 through 1978 FBI bomb summaries, references F-6 (p. 3), F-7 (p. 6), F-8 (p. 12), F-9 (p. 4), and F-3 (p. 9).

Table 69

The commercial airliner hijacking statistics in table 69 are from reference F-11, FAA report, FAA-RD-78-66, table 5, for the years 1949-76. The 1977 data are taken from the FAA semiannual report to Congress on the *Effectiveness of the Civil Aviation Security Program* for the period July through December 1978. The 1978 data were obtained directly from FAA officials.

Table 70

Table 70, concerning possible perpetrator countermeasures, was generated by OTA.

REFERENCES

- F-1 – J Roth, *Evaluation of the Needs and Benefits of the Explosive Tagging Program*, MSA report 317-1, March 1978.
- F-2 – BATF, *Explosives Incidents, 1978 Annual Report*,
- F-3 – FBI, *Uniform Crime Reports: Bomb Summary 1978*.
- F-5—A A Peterson, *4th Annual International Conference on Terrorist Devices and Methods*, England, May 1979.

F-6— FBI, *Uniform Crime Reports: Bomb Summary* 1974.

F-7 — FBI, *Uniform Crime Reports: Bomb Summary* 1975.

F-8 — FBI, *Uniform Crime Reports: Bomb Summary* 1976.

F-9— FBI, *Uniform crime Reports: Bomb Summary* 1977.

Table 54.—Minimum Bombing Incidents Statistics Summary^a

item	BATF		FBI	
	1977	1978	1977	1978
Explosive bombings, number	1,037 ^b	896 ^b	867	768
Undetonated explosive bombs, number	319	287	118	105
Incendiary bombings, number	339	446	248	349
Unignited incendiary bombs, number	81	71	85	79
Criminal accidents, number	21	67	—	—
Property damage from bombings, millions of dollars ^{c,d}	\$ 10	\$ 17	\$ 9	\$ 9
Injuries	80	185	162	135
People killed by bombings	38	23	22	18

^a BATF reported 3,177 incidents in 1977 and 3,256 in 1978. Total incidents include accidents, threats seized and recovered explosives, and hoaxes as well as actual explosive and incendiary bombings. The OTA study was concerned only with explosive bombings by these 953 in 1977 and 787 in 1978 were against substantial targets.

^b Includes both explosive and incendiary bombings. OTA was unable to obtain separate figures for number of criminal accidents, injuries, deaths and property damage caused by explosive and incendiary bombs incendiary bombs and bombings would not be affected by the proposed taggant program.

^c Actual value probably considerably higher due to lack of data file updates.

SOURCE: BATF 1978 *Explosives Incidents Report*, FBI *Uniform Crime Report Bomb Report*, 1978.

TABLE 1

Types of Explosives Incidents
By Number and Percentage

TYPE OF INCIDENT	1977		1978	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
Accident-Criminal	21	.70	67	2.1%
Bombing (Detonation)	1037	32.6%	896	27.5%
Bombing (Nondetonation)	319	10.0%	287	8.80
Incendiary (Ignited)	339	10.7%	446	13.7%
Incendiary (Nonignited)	81	2.5%	71	2.2%
Stolen Explosives	327	10.3%	362	11.1%
Recovered Explosives	751	23.7%	870	26.7%
Seized Explosives	102	3.2%	117	3.6%
Threats (Treasury facilities)	33	1.0	22	.7%
Hoax Devices	105	3.3%	47	1.4%
Accident-Noncriminal	62	2.6%	71	2.2%
TOTAL	3,177	100%	3,256	100%

TOTAL KILLED	TOTAL INJURED	TOTAL DAMAGE AMOUNT
1977 127	374	\$61,300,000
1978 69	707	\$27,500,000

F-10— J. Bengston, P. Cutchis, and J. Henry, *Protection of Airports Against Explosives*, report No. FAA-R D-77-28, January 1977.

F-11 — N. Asher, P. Frazier, C. Kennedy, and J. Kiernan, *Analysis of Past Airline Hijacking and Bombing Incidents and the Present Defense Against Such Attacks*, report No. FAA-R D-78-66, December 1977.

TABLE 9

BOMBINGS BY SPECIFIC TARGETS FUR 1977 - 1978 (Actual Detonations or Ignitions)							
TYPE TARGET	TOTAL INCIDENTS		NO. KILLED		NO. INJURED		Property Damage 1977.—
	1977	1978	1977	1978	1977	1978	
Residential	352	294	17	7	66	57	1,022.3
Commercial	367	375	7	6	48	46	6,640.1
Airports/Aircraft	7	5	1	—	1	—	.2
Police Facilities/Vehicles	14	29	—	—	—	—	5.8
Educational	106	97	—	—	13	5	43.1
Government (Local)	24	9	—	1	1	4	145.6
Government (Federal)	26	22	—	—	4	1	2.4
Military	4	3	—	—	—	1	—
Installations							
Utilities	51	57	1	—	1	2	628.0
Banks	22	18	—	—	—	—	225.2
Vehicles	216	252	11	7	24	25	363.3
Open Areas	36	40	1	2	8	13	.5
Mail boxes	48	69	—	—	1	2	25.8
Other	90	137	—	—	8	27	1,206.8
Unknown ²	34	2	—	—	5	252	22.6
Total	1,397	1,409	38	23	180	435	10,331.7

1. Figures are in thousands and are estimated.

2. This category includes those incidents where the type target was either unknown or not reported.

Year	INCIDENTS		1972 through 78		Property Damage (Dollar v.s. —)	Personal Inj.	Deaths
	Total Actual and Attempted Explosives	Killed-Explosives	Attempted Explosives	Incend.			
1972	1,962	714	793	237	218	7,991,815	176
1973	1,955	742	787	253	173	7,261,832	181
1974	2,044	893	758	236	157	9,886,563	207
1975	2,074	1,006	613	238	135	27,003,981	326
1976	1,570	852	405	188	125	11,265,426	213
1977	1,318	867	240	118	85	8,943,102	163
1978	1,301	768	349	105	79	0,161,485	133

Includes three major bombing incidents resulting in unusually high personal injuries and deaths and substantial damage to property.

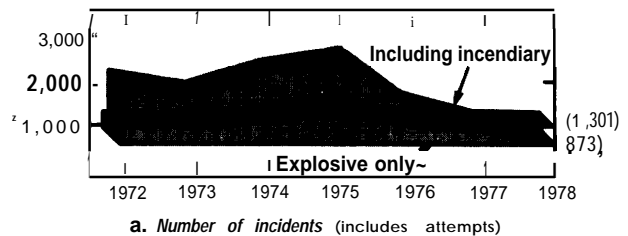
Table 55.—Explosive Bombing Incident Trends, 1972-78

Year	Total actual and attempted explosive bombings	Actual	Attempted	Total actual and attempted incendiary bombings	Actual	Attempted	Property damage (dollar value)	Personal injury	Death
1972	951	714	237	1,011	793	218	\$7,992,000	176	25
1973	995	742	253	960	787	173	7,262,000	187	22
1974	1,129	893	236	915	758	157	9,887,000	207	24
1975	1,326	1,088	238	748	613	135	27,004,000 ^a	32P	69
1976	1,040	852	188	530	405	125	11,265,000	212	50
1977	985	867	118	333	248	85	8,943,000	162	22
1978	873	768	105	428	349	79	9,161,000	135	18

^a includes three major bombing incidents resulting in unusually high personal injuries and deaths and substantial damage to property

SOURCE: FBI *Uniform Crime Reports Bomb Summary 1978*

Figure 22.—Annual Bombing Statistics, 1972-77



Year	INCIDENTS		1972 through 1978		Attempted	Property damage (dollar value)	Personal injury	Death
	Total Actual Explosive Bombings	Actual	Explo	Incend				
1972	1,962	114	793	237	218	7,991,815	176	25
1973	1,955	742	781	253	113	7,261,832	181	22
1974	2,044	893	758	236	157	9,996,563	207	24
1975	2,074	1,088	613	238	135	7,003,981	326	69
1976	1,570	852	405	188	125	1,265,426	212	50
1977	1,318	861	248	119	85	8,943,300	162	22
1978	1,301	768	349	105	79	9,161,485	135	18

^a includes three major bombing incidents resulting in unusually high personal injuries and deaths and substantial damage to property.

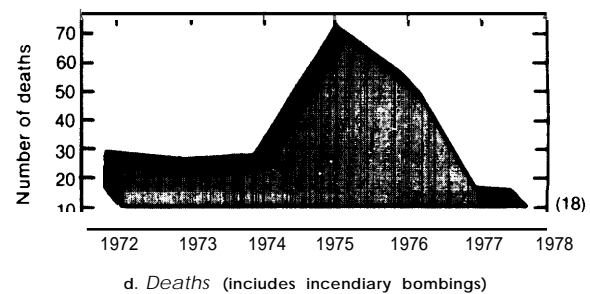
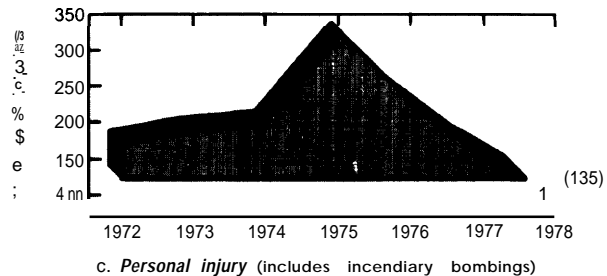
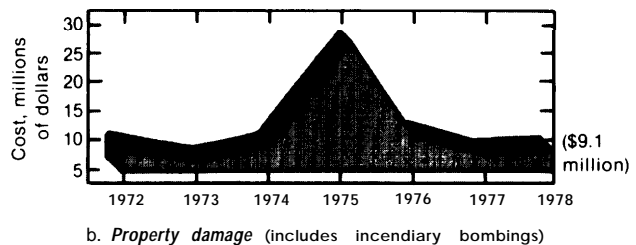


Table 56. -Identified Explosive Fillers Used in Bombs

	Lab Identified fillers 1978	All Identified fillers 1978	Average
Black powder, . . .	13%	21%	17.40
Smokeless powder	16	19	17.5
Military , , , , , . . .	2	7	4.5
Cap sensitive	32	30	31
Blasting agents.	—	1	5
Chemicals	—	1	.5
Others.	36	21	28.5

SOURCE: BATF data.

TABLE I

Types of *Explosive* Incidents
By Number and Percentage

TYPE OF INCIDENT ¹	1977		1978	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
Accident- Criminal	21	. 7%	67	2.1%
Bombing(Detonation)	1037	32.6%	896	27.5%
Bombing (Nondetonation)	319	10.0%	287	8.8%
Incendiary (Ignited)	339	10.7%	446	13.7%
Incendiary (Nonignited)	81	2.5%	71	2.2%
Stolen Explosives	327	10.3%	362	11.1%
Recovered Exclusives	751	23.7%	870	26.7%
Seized Explosives	102	3.2	117	3.6%
<i>Threats</i> (Treasury Facilities)	33	1.0%	22	. 7
Hoax Devices	105	3.3%	47	1.4%
Accident-Noncriminal	62	2.08%	71	2.2%
TOTAL	3,177	100%	3,256	100%

TOTAL KILLED	TOTAL INJURED	TOTAL DAMAGE AMOUNT
1977 127	374	\$61,300,000
1978 69	707	\$27,500,000

TABLE 13

Types of Explosives Filler Used
With in the Destructive Device

Type of Filler	NUMBER		PERCENTAGE ²	
	1977	1978	1977	1978
Flammable Liquid	279	468	36.4%	36.2%
Black Powder	222	171	29.00	13.2%
SMOKELESS Powder	133	157	17.4%	12.2%
Military Explosives	19	54	2.4%	4.2%
Dymmite ³	30	251	4.0%	19.4%
Blasting Agent	23	8	3.0%	.6%
Chemical	10	7	1.3%	.5%
Other ⁴	50	176	6.58	13.7%
Unknown	1,031	475	—	—
TOTAL FILLER	1,797	1,767	100%	100%

1. This category includes fillers that were placed in some Specific type of container SUCH as a pipe, metal box, or attache case.
2. These percentages do not include 1,031 incidents in 1977 and 475 incidents in 1978 in which the type of filler was not made available, or the laboratory results for recent incidents were not completed.
3. The method in which the filler was determined has been revised for 1978. Dynamite with in the sticks are counted as a filler.
4. This category includes those fillers which could not be placed in the categories provided.

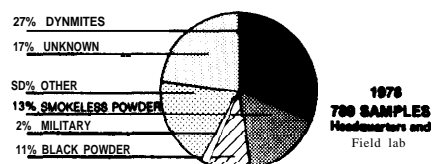
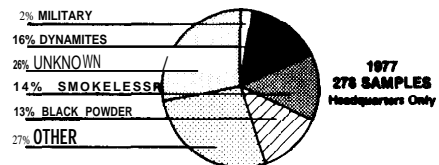
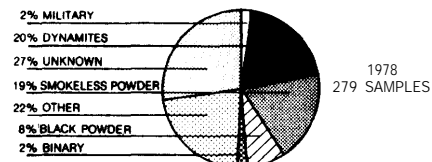
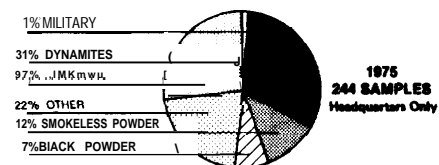
off laboratory analyses of
explosives used in crime

Table 57. -Bombing Casualties and Damage in 1978 by Type of Bomb

Filler material	Number of bombings against substantial targets	Deaths	Injuries	Property damage \$ millions
Air fillers.	1,298	23	185	\$172
Incendiary	428	3	13	3.7
Black powder	148	4	19	2
Smokeless powder	152	3	23	2
Military explosive	39	0	7	
Cap sensitive.	270	7	26	2.3
Other		3	40	2.4
Unknown		3	57	7.4
Total for those fillers which would be directly tagged	570	14	68	3.7

¹Value probably higher due to lack of data update.²Cap-sensitive explosives, black powder, and smokeless powder would be tagged.

SOURCE: BATF data.

TABLE 1

Types of Explosives Incidents
By Number and Percentage

TYPE OF INCIDENT	1977		1978	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
Accident-Criminal	21	.70	67	2.1%
Bombing (Detonation)	1037	32.6%	96	27.5%
Bombing (Nondetonation)	319	10.1%	287	8.8%
Incendiary (Ignited)	339	10.7%	446	13.7%
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Seized Explosives	102	3.2%	117	3.6%
Threats (Treasury Facilities)	33	1.1%	22	.7%
Hoax Devices	105	3.3%	47	1.4%
Accident-Noncriminal	62	1.9%	71	2.2%
TOTAL	3,117	100%	3,256	100%

TOTAL KILLED	TOTAL INJURED	TOTAL DAMAGE AMOUNT
1977 127	374	\$61,300,000
1978 69	707	\$27,500,000

TABLE 9

BOMBINGS BY SPECIFIC TARGETS
FOR 1977 - 1978
(Actual Detonations or Ignitions)

TYPE TARGET	TOTAL INCIDENTS		NO. KILLED		W. INJURED		PROPERTY DAMAGE	
	1977	1978	1977	1978	1977	1978	1977	1978
Residential	352	294	17	7	66	57	1,022.3	2,982.2
Commercial	367	375	7	6	48	46	6,640.1	8,777.7
Aircraft/Airport	7	5	1	—	1	—	.2	.2
Police/Facilities	14	29	—	—	—	—	5.8	70.4
Vehicles	106	97	—	—	13	5	43.1	532.3
Educational	24	9	1	1	1	4	145.6	70.1
Government (Local)	26	22	—	—	4	1	2.4	6.6
Government (Federal)	4	3	—	—	1	—	—	0.0
Military	—	—	—	—	—	—	—	—
Installations	51	57	1	—	1	2	628.0	1,727.7
Utilities	22	18	—	—	—	—	225.2	49.3
Banks	216	252	11	7	24	25	363.3	2,119.4
Vehicles	36	40	1	2	8	13	.5	4.2
Open Areas	48	69	—	—	1	2	25.8	2.1
Mail Boxes	90	137	—	—	8	27	1,206.8	869.9
Other	—	—	—	—	—	—	—	—
Unknown	34	2	—	—	5	252	22.6	0.0
Total	1,397	1,409	38	23	180	435	10,331.7	17,212.1

1. Figures are in thousands and are estimated.

2. This category includes those incidents where the type target was either unknown or not reported.

Killed, Injured, and
Property Damage by Explosives
CY1978

	BOMBINGS			ACCIDENTS EXPLOSIONS			TOTALS		
	K	I	PROPERTY DAMAGE-\$	K	I	PROPERTY DAMAGE-\$	K	I	PROPERTY DAMAGES
INCENDIARY	3	13	3,659,760	8	156	300,000	11	171	3,959,760
BLACK POWDER	4	19	174,739	—	—	—	4	19	174,739
SMOKELESS POWDER	3	23	150,000	3	2		6	25	150,200
MILITARY	—	7	21,0511	6	17	7,000	6	24	28,050
DYNAMITE	7	26	3,359,433	1	4		8	30	3,359,433
OTHER	3	40	2,442,563	16	321	5,545,100	19	361	7,967,963
UNKNOWN	3	57	7,404,765	12	20	4,396,000	15	77	11,800,765
TOTALS	23	185	17,212,330	46	522	10,246,103	69	707	27,460,931

Slide used to illustrate a presentation on explosives tagging by A. Peterson,
Bureau of Alcohol, Tobacco, and Fire arms U.S. Treasury Department, at the forth
International Conference on Terrorist Devices, and Methods England. May 7. 1979.
According to BATF, this data has not been published elsewhere.

Table 58.—Bombings by Specific Targets for 1977-78 (actual detonations or ignitions)

Type target	Total incidents		No killed		No injured		Property damage a	
	1977	1978	1977	1978	1977	1978	1977	1978
Residential	352	294	17	7	66	57	\$ 1,022.3	\$2,982.2
Commercial	367	375	7	6	48	46	6,640.1	8,777.7
Airports/aircraft	7	5	1	—	1	—	.2	.2
Police facilities/vehicle:	14	29	—	—	—	—	5.8	70.4
Educational	106	97	—	—	13	5	43.1	532.3
Government (local)	24	9	—	1	1	4	145.6	70.1
Government (Federal)	26	22	—	—	4	1	2.4	6.6
Military Installations	4	3	—	—	—	1	—	0.0
Utilities	51	57	1	—	1	2	628.0	1,727.7
Banks	22	18	—	—	—	—	225.2	49.3
Vehicles	216	252	11	7	24	25	363.3	2,119.4
Open areas	36	40	1	2	8	13	.5	4.2
Mailboxes	48	69	—	—	1	2	25.8	2.1
Other	90	137	—	—	8	27	1,206.8	869.9
Unknown ^b	34	2	—	—	5	2	22.6	0.0
Total	1,397	1,409	38	23	180	185	\$10,331.7	\$17,212.1

^aProperty damage figures are in thousands and are estimated.

^bThis category includes those incidents where the type target was either unknown or not reported.

SOURCE: BATF 1978 *Explosives/Incidents Report*.

TSLE 9

BOMBINGS BY SPECIFIC TARGETS
FOR 1977 - 1978
(Actual Detonations or Ignitions)

TYPE TARGET	TOTAL INCIDENTS		NO. KILLED		NO. INJURED		PROPERTY ¹ DAMAGE	
	1977	1978	1977	1978	1977	1978	1977	1978
Residential	352	294	17	7	66	57	1,022.3	2,982.2
Commercial	367	375	7	6	48	46	6,640.1	8,777.7
Airports/aircraft	7	5	1	—	1	—	.2	.2
Police Facilities/ Vehicles	14	29	—	—	—	—	5.8	70.4
Educational	106	97	—	—	13	5	43.1	532.3
Government (Local)	24	9	—	1	1	4	145.6	70.1
Government (Federal)	26	22	—	—	4	1	2.4	6.6
Military Installations	4	3	—	—	—	1	—	0.0
Utilities	51	57	1	—	1	2	628.0	1,727.7
Banks	22	18	—	—	—	—	225.2	49.3
Vehicles	216	252	11	7	24	25	363.3	2,119.4
Open Areas	36	40	1	2	8	13	.5	4.2
Mail Boxes	48	69	—	—	1	2	25.8	2.1
Other	90	137	—	—	8	27	1,206.8	869.9
Unknown ²	34	2	—	—	5	252	22.6	0.0
Total	1,397	1,409	38	23	180	435	10,331.7	17,212.1

1. Figures are in thousands and are estimated.

2. This category includes those incidents where the type target was either unknown or not reported.

Table 59. -Percent of Bomber Targets That Would Be Protected by a Detection Sensor

	Total bombings	Injuries	Deaths
Average number of bombings of known, substantial target ^a	1,175	150	29
Bombings of residences, vehicles.	557 (47%)	86 (58%)	21 (72%)
Bombings of commercial establishments.	371 (32%)	47 (31 %)	(22%)
Total unlikely to have sensors	928 (79%)	133 (89%)	28 (94%)

^aIncludes both incendiary and explosive bombings for 1977 and 1978.^bOpen fields and mailboxes are excluded from these data.

SOURCE: BATF 1978 Explosives incidents #leom.

TABLE 9

BOMBINGS BY SPECIFIC TARGETS
FOR 1977 - 1978
(Actual Detonations or Ignitions)

TYPE _TARGET	TOTAL INCIDENTS		NO. KILLED		NO. INJURED		PROPERTY ¹ DAMAGE	
	1977	1978	1977	1978	1977	1978	1977	1978
Residential	352	294	17	7	66	57	1,022.3	2,982.2
Commercial	367	375	7	6	48	46	6,640.1	8,777.7
Airports/Aircraft	7	5	1	—	1	—	.2	.2
Police Facilities/	14	29	—	—	—	—	5.8	70.4
Vehicles								
Educational	106	97	—	—	13	5	43.1	532.3
Government (Local)	24	9	—	—	1	4	145.6	70.1
Government (Federal)	26	22	—	—	4	1	2.4	6.6
Military	4	3	—	—	—	1	—	0.0
Installations								
Utilities	51	57	1	—	1	2	628.0	1,727.7
Banks	22	18	—	—	—	—	225.2	49.3
Vehicles	216	252	11	7	24	25	363.3	2,119.4
Open Areas	36	40	1	2	8	13	.5	4.2
Mail Boxes	48	69	—	—	1	2	25.8	2.1
Other	90	137	—	—	8	27	1,206.8	869.9
Unknown ²	34	2	—	—	5	252	22.6	0.0
Total	1,397	1,409	38	23	180	435	10,331.7	17,212.1

1. Figures are in thousands and are estimated.

2. This category includes those incidents where the type target was either unknown or not reported.

Table 60.- Attributes of Criminal Bomber Groups

Perpetrator	Expiience and tranning	Resources	Motivation	Individual or group	Reaction capability	Freaquency
Criminal						
Unsophisticated	L	L	M	I	M	Multi
Sophisticated	H	M	H	I	H	Multi
<i>Terrorist</i>						
Polittcal	M-H	M-H	M-H	G	M-4	Multi
Separatist	M-H	M	H	G	H	Multi
Reactional	L	L	H	G	L-M	Multi
<i>Mentally disturbed</i>						
Disenchanted	L	L	L-W	I	L	Single
Vengeful	L	L	M-H	I	i--M	Single
Pathological	L-M	L	H	I	L -M	Varies
other						
Vandals	L	L	L-M	I	L	Single
E x p e r i m e n t e r : ~	M	L	L-M	I	L.M	Single

L.Low. M. Mooerate High* Individual G-Group
 SOURCE. Office of Technology Assessment

Table 61.-Estimated Number of Significant Bombings by
Group of Perpetrators (average of years 1974-78)

Perpetrator group	Estimated number of bombings
Terrorists.	107
Criminals.	98
Mentally disturbed	340
Vandals and experimenters.	348

SOURCE. FBI data.

BOMBING INCIDENTS BY TARGET AND APPARENT MOTIVE

Target	Total	Anti-"Establishment"	Anti-Religious	Civil Rights	Extremist	For #	Political	Religious Dispute	Religious Destruction	Monetary Gain	Personal Animosity	Politics	Revenge	Suicide	Unknown	Other
TOTAL	2,044	54	8	25	30	11	24	70	53	69	51	13	2	90	2	
Residences	560															
Private Residence	420	1	...	1	1	13	33	2	41	8	2	...	13	7		
Apartment House	61	1	...	4	...	...	13	1	38	...	...	...	2	1		
Other Private Property	79	...	1	2	1	...	52	2	16	...	...	...	3	...		
Commercial Operations	458															
Commercial Building	356	13	...	9	13	1	13	92	20	56	17	1	...	18	3	
Office Building	38	1	...	...	3	1	5	7	...	8	7	...	...	2	1	
Industrial Building	30	2	...	...	...	...	10	4	...	8	...	...	...	4	...	
Theater	22	...	...	3	2	3	6	...	7	...	...	...	1	1	...	
Motel and Hotel	12	1	...	...	...	1	3	1	3	1	1	...	...	...	x	
Vehicles	257															
Auto	182	1	1	...	...	...	8	35	2	24	...	3	...	5	2	
Other Vehicle	73	1	...	2	...	1	16	8	...	37	...	1	...	4	1	
Aircraft	2	1	...	...	...	...	...	...	1	...	...	...	...	...	...
School Facilities	187	2	...	...	...	2	52	...	27	...	...	...	...	...	4	
Public Safety	72															
Law Enforcement	69	21	...	...	...	...	13	...	29	1	2	...	1	2		
Fire Department	3	...	...	...	...	...	1	...	2	...	...	...	...	...	...
Public Utilities	63	2	...	...	...	34	10	12	2	2	...	...	...	...	1	
Persons	44	...	...	...	...	...	6	2	29	...	2	2	1	2		
Recreation Facilities	38	...	...	...	...	1	30	...	2	2	...	...	1	2		
Transportation Facilities	37	1	...	1	...	5	25	1	2	...	...	...	2	...		
Government Property	36															
Federal	10	2	...	...	...	1	2	...	3	...	...	...	1	1		
State	8	1	...	1	...	...	2	...	3	...	...	...	...	...	...
Local	18	1	...	...	...	...	10	...	3	2	...	...	1	1		
Construction Sites and Equipment	30	...	...	...	...	5	11	4	5	2	...	...	3	...		
Telephone Facilities	20	...	...	...	1	...	11	5	2	...	1	...	1	...		
Other Communication Facilities	3	...	...	...	...	...	...	3	...	...	...	...	...	...
Military Facilities	19	...	...	...	...	...	11	...	2	3	...	...	2	1		
Churches	15	...	6	1	...	...	4	...	4	...	...	...	...	...
Postal Facilities and Equipment	15	1	...	...	...	...	11	...	2	...	...	...	1	...		
International Establishments	10	1	...	1	4	...	...	...	4	...	...	...	...	...
Court Houses	7	...	...	1	...	1	...	4	...	...	...	...	1	...		
Medical Facilities	5	1	...	...	...	...	4	...	1	...	...	...	...	...
Newspaper Facilities	1	1	...	...	...	...	...	...	...	...	...	...	1	...		
Open Area	117	...	...	...	...	3	96	...	3	1	...	...	9	5		
Unknown (Premature Determination)	29	...	...	2	...	...	6	...	...	...	...	...	13	6		
Other	21	1	...	3	1	...	9	2	3	1	...	...	...	1		

BOMBING INCIDENTS BY TARGET AND APPARENT MOTIVE

Target	Total	1 Individual	2 Group	3 Political Rights	4 Extremist	5 Labor	6 Political	7 Labor Dispute	8 Malicious Destruction	9 Monetary Gain	10 Political	11 Racketeering	12 Unknown	13 Other
TOTAL	2,074	1	1	1	1	1	1	1	1	1	1	1	1	1
Residences	582													
Private Residence	364	3	..	12	1	1	11	12	7	07	1	1	24	4
Apartment House	77	1	..	..	..	..	..	23	..	38	..	..	14	1
other Private Property	121	4	..	..	..	..	..	90	..	19	..	..	7	1
Commercial Operations	485													
Commercial Building	387	9	..	10	13	2	19	86	28	u	9	9	34	4
Office Building	39	3	..	..	5	1	2	4	1	8	8	..	s	1
Industrial Building	37	..	..	..	3	..	13	3	2	11	..	..	3	..
Theater	12	..	..	..	..	..	2	s	..	4	..	..	..	1
Motel and Hotel	10	..	..	..	..	..	..	s	..	3	..	..	2	..
Vehicles	273													
Automobile	201	2	..	1	2	..	4	36	2	37	..	2	14	1
Other Vehicle	69	1	..	2	2	3	8	9	3	32	2	1	5	1
Aircraft	3	..	..	..	1	..	..	..	..	1	..	..	1	..
School Facilities	165	4	..	10	1	..	..	25	..	16	..	..	8	1
Law Enforcement	76													
Building	22	3	..	..	2	2	..	4	1	6	..	..	3	1
Vehicle	33	5	..	2	3	..	..	13	..	13	..	..	5	1
Other	21	..	..	1	..	..	..	..	..	16	..	..	..	..
Government Property	62													
Federal	24	1	..	..	9	2	..	4	..	2	1	..	s	..
state		1	..	..	1	1	..	6	..	..	..	..	2	..
Local . . . . .		..	..	..	1	1	..	18	..	3	..	..	4	..
Persons	43	..	..	..	..	..	..	3	..	30	..	2	3	s
Public Utilities	41	s	..	..	u	..	2	10	..	..	1	..	10	..
Recreation Facilities	33	..	..	..	..	..	..	29	..	3	..	..	1	..
Telephone Facilities	26	..	..	..	..	..	2	16	7	1	..	..	..	..
Other Communication Facilities	6	..	..	..	..	1	..	..	..	4	1	..	..	..
Transportation Facilities	25	..	..	1	..	1	2	14	2	1	..	..	4	..
Construction Sites and Equipment	20	..	..	..	..	..	10	6	1	2	..	..	1	..
Postal Facilities and Equipment	17	..	..	..	..	2	..	11	..	1	..	4	3	..
Churches	16	1	2	2	..	..	..	6	1	2	..	..	2	..
Military Facilities.	14	2	..	..	2	..	..	4	..	3	..	1	1	2
International Establishments	11	..	..	..	..	6	..	..	..	4	..	..	1	..
Medical Facilities.	10	..	..	1	..	..	..	3	..	6	..	..	..	..
Courthouse	4	..	..	4	1	2	..	..	..	..	..	..	1	..
Newspaper Facilities	1	..	1	..	..	..	..	..	..	1	..	..	..	..
Open Area.	101	1	..	2	2	..	..	80	1	..	..	1	8	3
Unknown (Premature Detonation).	37	..	..	..	..	..	..	12	..	..	..	..	13	9
other	26	..	..	..	..	..	..	15	..	..	..	..	8	..

Table 9
BOMBINGS INCIDENTS BY TARGET AND APPARENT MOTIVE
1976.

Target	Totals	Anti-"Establishment"	Anti-Religious	Civil Rights	Extremist	Foreign Political	Labor Dispute	Malicious Destruction	Monetary Gain	Personal Animosity	Political	Racketeering	Unknown	Other
TOTALS	1,570	19	5	9	7a	21	67	137	39	13	147	16	18	78
Residences	433													
Private Residence	262	3	5	5	11	5	4	9	1				3	
Apartment House	40			1	1		0	1					1	
Other Private Property	112			*		6		1	1	1			7	
Commercial Operations	335													
Commercial Building	279	3	1	26	1	10	3	10	6	4	5		13	
Office Building	21			4		1		1		2	*		*	
Industrial Building	23			2		8		2					2	
Theater	7				1	1	2	1		1	1		1	
Motel and Hotel	5			2	*			*						
Vehicles * * * * *	192													
Automobile	142	1	1	1			2	4	3	2	5	5	5	
Other Vehicle	48	0	1	1	1					1	1	1	2	
Aircraft	2	*	*	1										
School Facilities	124	2	*	2			71		6	4		36	5	
Law Enforcement	47													
Building	10			2			1		2			5		
Vehicle	17	2					5		4			5	1	
Other	20	2		2	1				8			5	2	
Government Property	38													
Federal	13		*	1			2		2			8		
State	1	1		1			2					2		
Local	19	1					7					8	3	
Persons,	62			12	1		16	28		5	13	7		
Public Utilities * * * *	28	1		5		10	3		1			8		
Recreation Facilities	22						10	1			1	9		
Telephone Facilities	25	1					8	3				12	1	
Other Communication Facilities	2			1					1					
Transportation Facilities	14						10					4		
Construction Sites and Equipment	28	*	*			6	7		3			10		
Postal Facilities and Equipment	26		w.	1			12					12	1	
churches	10		J				3		1			3		
Military Facilities	5	1		1			2					1		
International Establishment	10			3	5					1		1		
Medical Facilities	4						1		1			2		
Courthouses	5			1	1		1			1				
Newspaper Facilities	2	1		1		1								
Open Area	77				1		26		1			38	11	
Unknown (Premature Detonation)	42						11	2	1			16	12	
Other	20	1		3		1	3		3			7	2	

Table 9: BOMBING TARGETS AND APPARENT MOTIVES, 1977

Target	Total	Amity	Diversion	Extortion	Fraud	Intimidation	Jealousy	Protest	Publicity	Reprisal	Retaliation	Sabotage	Subversion	Vandalism	Unknown	Other
TOTAL	1,318	116	3	6	4	80	11	26	67	31	21	8	4	602	11	1
Residences	292															
private Residence	193	41		21		16			2	9	10					4
Apartment House	21	4				1										1
other Private Property	78	3	*			2								13	49	2
Commercial operations	282															
Commercial Building	186	15	1	1	2	13		5	11	3	4	1		5	113	7
Office Building	28							2	8	1	1	1			11	2
Industrial Building	25			"ij"		3		3	1	1		2				
Bank	26	1	1					2	5					1	1	
Theater	11	2		J		1			1						6	1
Motel and Hotel	6			J:1" i				4	1							
Vehicles	175	1														
Automobile	119	9				11	4		3	6	1					3
Other Vehicle	47	6				7		1	2		3					2
Aircraft	9					7						1			1	
School Facilities	100	3				1	27			1				27	41	1
Law Enforcement	36															
Building	13	1	1				1			3					6	1
Vehicle	5	1							1					1		1
Other	18								5	1	2					1
Government Property	66															
Federal	15	1					2		3					1	9	
State	11						1									4
Local	40	8					10	1					1		2	
Persons	78	19		1	1	3			9	7	4				31	3
Public Utilities	28	1				4		1	3			1	3	1	14	z
Recreation Facilities	17					2		1						2	12	
Telephone Facilities	13					1	1							2	9	
Other Communication Facilities	1							1								
Transportation Facilities	23	1				3			1	1				J	16	
Construction Sites and Equipment	32	1				3	4	1		1	1			2	18	1
Postal Facilities and Equipment	15								1					1	13	
Churches	6														6	
Military Facilities	9					1	1	1						1	5	
International Establishments	3							1				1				
Medical Facilities												1				
Courthouses	4						1							1	3	
Newspaper Facilities	2														2	
open Area	78					1	23	1	1					2	44	6
Unknown (Premature Detonation	29	1					7		1					2	11	7
Other	29					3	3	2	7		1	4		1	11	1

• Unless a feasible motive can be determined for each bombing incident, the motive is listed as the Unknown Category.

Table 9: BOMBING TARGETS AND
APPARENT MOTIVES, 1978

Target	Total	Animosity	Drive-By	Extortion	Fraud	Hitler #1	Mischief	Pro-S	Public	Rep #1	Rev #1	Subversion	Vandalism	Unknown	Other
TOTAL	1,301	2	~	~	0	41	Q	8	~	~	~	~	~	S	
Residences	341														
Private Residences	216	4	..	..	..	U	2	..	5	8	..	5	34	8	
Apartment House	53	3	..	..	..	1	..	..	2	4	..	..	40	..	
Other Private Property	72	1	..	..	..	s	..	..	1	1	..	..	43	3	
Commercial Operations	270														
Commercial Building	180	13	..	1	2	5	4	4	3	1	s	..	1	35	6
Office Building			..	..	..	..	..	3	..	..	..	..	..	17	..
Industrial Building	..		1	1	..	1	3	..	..	..	..	..	..	18	3
Bank	18	..	1	..	..	..	2	..	..	..	..	..	..	14	1
Theater	10	1	..	..	..	..	1	1	..	..	..	1	5	1	
Motel or Hotel	11	..	..	s	..	..	..	..	..	..	..	..	5	1	
Vehicles	178														
Automobile	142	7	..	..	2	9	1	..	1	2	7	..	3	97	
Other Vehicle	36	5	..	..	..	1	..	..	2	1	..	..	1	23	..
Aircraft	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
School Facilities	101	..	..	1	..	..	12	3	..	1	..	..	10	63	1
Public Safety	41														
Law Enforcement	38														
Building	11	..	..	..	..	..	..	..	..	1	..	..	10	..	(
Vehicle	23	..	..	..	..	1	1	..	1	1	..	..	19	..	..
Other	4	..	2	..	..	..	..	..	1	1	..	..	..	..	..
Fire Department and Equipment	3	..	..	..	..	1	..	..	..	..	..	..	2	..	..
Government Property	31														
Federal	11	..	..	..	..	..	2	2	..	..	..	..	6	1	
State	2	..	..	..	..	..	..	..	..	..	..	..	2	..	
Local	18	..	..	..	..	..	3	..	..	..	..	2	12	1	
Persons.	61	0	..	1	..	1	..	1	..	2	5	..	..	35	6
Public Utilities.	31	..	1	..	..	..	1	1	1	..	..	2	..	19	6
Recreation Facilities	19	1	..	..	..	..	2	..	..	..	1	..	..	15	..
Telephone Facilities	21	..	..	..	..	..	3	..	..	..	..	..	..	18	..
Other Communication Facilities.	2	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Transportation Facilities	37	2	..	..	..	..	1	2	..	..	..	2	1	24	5
Construction Sites and Equipment	10	..	..	..	..	..	..	..	1	..	..	..	..	8	1
Postal Facilities and Equipment.	14	..	..	..	..	..	..	..	..	..	..	2	..	12	..
Churches	9	..	..	1	..	..	1	..	..	..	..	..	7	..	
Military Facilities	7	..	..	..	..	..	1	..	..	..	2	2	2	..	
International Establishments *	7	..	..	..	..	..	3	1	..	..	..	..	3	..	..
Medical Facilities 9 * * * . * . * . *	3	..	..	..	..	..	1	..	..	..	..	..	2	..	
Courthouse	3	..	..	..	..	..	..	..	..	..	..	..	3	..	
Newspaper Facilities.	5	..	..	..	..	..	1	..	..	..	..	..	4	..	
Open Area	46	2	..	1	..	1	8	..	..	..	..	..	33	1	
Unknown (Premature Destination)	33	..	..	..	..	..	9	..	..	..	..	..	16	8	
Other	31	..	..	..	..	..	1	..	..	1	..	2	22	s	

● Unless a feasible motive can be determined for each bombing incident, the motive is listed *■ the Unknown category.

Table 1: BOMBING INCIDENTS 1972 through 1978

Year	Total Actual and Attempted Bombings	Actual		Attempt		Property Damage (Dollar Value)	Personal Injury	Deaths
		Explo.	Incend.	Explo.	Incend.			
1972	1,962	714	793	237	218	\$1,991,815	176	25
1973	1,955	742	787	253	173	7,261,832	187	22
1974	2,044	893	758	236	157	9,886,563	207	24
1975	2,074	1,088	613	238	135	27,003,981*	326*	69
1976	1,570	852	405	188	125	11,265,426	212	50
1977	1,318	867	248	118	85	8,943,300	162	22
1978	1,301	768	349	105	79	9,161,485	135	18

*Includes three major bombing incidents resulting in unusually high personal injuries and deaths and substantial damage to property.

Table 62.-Stolen and Recovered Explosive Summary

Type	Amount stolen		Amount recovered	
	1977	1978	1977	1978
Blasting agents, Pounds	20,834	42,172	21,260	23,623
Black powder, pounds.	145	379	277	723
Smokeless powder, pounds.	0	163	16	1,361
Boosters, pounds	2,177	9,528	2,804	362
Military explosives, pounds		140	640	701
Cap-sensitive highexplosives, pounds	36,498	44,316	43,738	41,097
Primer, units	1,300	4,333	2,733	344
Blasting caps, units	61,531	66,614	40,719	44,456
Det. cord/safety fuse/ignitor cord, feet	183,224	113,510	84,554	101,117
Total, explosives, pounds	61,003	101,217	71,470	74,966
Blasting caps, units	61,531	66,614	40,719	44,456
Oct. cord/safety fuse/ignitor cord, feet.	183,224	113,510	84,554	101,117

SOURCE. BATF 1978 Explosives incidents Report

TABLE 23

The Amount of Explosives Recovered and Seized by General and Specific types for 1977 - 1978

TYPE-GENERAL	AMOUNT RECOVERED	
	1977	1978
High Explosives	49,915	42,501
Low Explosives	295	8,842
Blasting Agents	21,260	23,623
Blasting Caps	40,719	44,456
Det. Cord/Safety Fuse/ Ig. Cord	84,554	101,117
TYPE-SPECIFIC	AMOUNT RECOVERED 1978	
Blasting Agents	21,260	23,623
Black Powder	277	723
Smokeless Powder	16	1,361
Photo lash Cartridges Powder	2	150
Potassium Chlorate	—	6,300
Boosters	2,804	362
Military Explosives	156	697
RLIX	484	4
TNT	699	86
Dynamite	43,039	41,008
Primer	2,733	344
Blasting Caps	40,719	44,456
Det. cord/Safety Fuse/Ig. cord	84,554	101,117
TOTAL EXPLOSIVES RECOVERED:	71,470 lbs.	74,966 lbs.
DET. CORD/SAFETY FUSE/IGNITOR CORD:	84,554 ft.	101,117 ft.
BLASTING CAPS:	40,719 ea.	44,456 ea.

TABLE 17

The AMOUNT of Explosives Stolen By General and Specific Types for 1977 - 1978

TYPE - GENERAL	AMOUNT STOLEN	
	1977	1978
High Explosives	40,024	58,327
Low Explosives	145	718
Blasting Agents	20,834	42,172
Blasting Caps	61,531	66,614
Det. Cord/Safety Fuse/Ig. Cord	183,224	113,510
TYPE - SPECIFIC	AMOUNT STOLEN	
Blasting Agents	20,834	42,172
Black Powder	145	379
Smokeless Powder	0	163
Boosters	2,177	9,528
Military Explosives	44	123
TNT	5	17
Dynamite	36,498	44,316
Primer	1,300	4,333
Blasting Caps	61,531	66,614
Det. Cord/Safety Fuse/Ig. Cord	183,224	113,510
TOTAL EXPLOSIVES STOLEN:	61,003 lbs.	101,217 lbs.
DET. CORD/SAFETY FUSE/IGNITOR CORD:	183,224 ft.	113,510 ft.
BLASTING CAPS:	61,531 ea.	66,614 ea.

**Table 63.-Explosives Thefts by Method of Entry-
Number of Incidents and Percentages for 1977-78**

Entry method	Number		Percentage	
	1977	1978	1977	1978
Locks cut.	59	71	31.1	26.9
Locks pried	36	50	18.9	19.0
Door pried	10	10	5.3	3.9
Key,	14	23	7.4	8.8
Window entry.	7	3	3.7	1.1
Inside help.	3	0	1.6	-
Wall entry	10	16	5.3	6.1
Burning.	2		1.0	.4
Roof entry	7		3.7	1.1
Door blown.	1	2	.5	.8
Floor entry	0			.4
Vent entry	1		.5	1.1
Other.	40	80	21.0	30.4
Unknown.	137	99	-	-
Total	327	362	100	100

^aThese percentages do not include 137 unknown method incidents for 1977 and the 99 incidents for 1978.

^bThis figure reflects those incidents where the entry method could not be placed in the above categories.

SOURCE: BATF 1978 Explosives Incidents Report

TABLE 18

Explosives Thefts by Method of Entry - Number
of Incidents and Percentages for 1977-1978

ENTRY METHOD	NUMBER		PERCENTAGE	
	1977	1978	1977	1978
Locks Cut	59	71	31.1%	26.9%
Locks Pried	36	50	18.9%	19.0%
Door Pried	10	10	5.3%	3.9%
Key	14	23	7.4%	8.8%
Window Entry	7	3	3.7%	1.1%
Inside Help	3	0	1.6%	-
Wall Entry	10	16	5.3%	6.1%
Burning	2	1	1.0%	.4%
Rooff Entry	7	3	3.7%	1.1%
Door Blown	1	2	.5%	.8%
Floor Entry	0	1	-	.4%
Vent Entry	1	3	.5%	1.1%
Other ¹	40	80	21.0%	30.4%
Unknown ²	137	99	-	-
Total	327	362	100%	100%

1. These percentages do not include 137 incidents for 1977 and 99 incidents for 1978.

2. This figure reflects those incidents where the entry Method could *not* be placed in the above categories provided.

(from reference 2)

Table 64.—Explosions Aboard U.S. Aircraft

Date	Carrier	Aircraft	Aircraft location	Bomb location	Outcome	Device
1 1/1/55	UAL	DC-6B	11 minutes after TO	Baggage	Airplane disintegrated—44 killed	Dynamite
7/25/57	WA	CY-240	47 minutes after TO	Lavatory	Passenger thrown out of lavatory—hole in aircraft side; plane landed successfully	Dynamite
1/6/60	NA	DC-6B	184 minutes after TO	Underseat passenger compartment	34 killed, airplane disintegrated	Dynamite, dry cells
5/22/62	co	707	39,000 ft	Towel container in rear lavatory	Tail blown off—45 killed	Dynamite
11/12/67	AA	727	102 minutes after TO	Rear baggage compartment	3 bags destroyed; aircraft saved	Black powder (?)
11/19/68	co	707	24,000 ft	Lavatory	Fire and explosion in lavatory; extinguished by crew; plane landed safely	—
8/29/69	TW	707	Ground after hijack (Damascus, Syria)	Explosives thrown in cockpit after evacuation	No casualties from explosion	Grenades & canister explosive
9/7/70	PA	747	Ground after hijack (Cairo, Egypt)	—	Demolished after evacuation	—
9/12/70	TW	707	Ground after hijack (Dawson Field, Jordan)	—	Demolished after evacuation	—
12/29/71	—	Turbo Cmdr	In hangar	Seat in cabin	Aircraft destroyed, hangar damaged; no casualties	—
3/8/72	TW	707	Parked on ground	Cockpit	No casualties (plane empty)	c-4
9/21/73	—	Navion	Parked on ground	Engine manifold	Not known	—
12/17/73	PA	707	On ground, Rome	Attack while loading	Fire damage; 30 killed, many injured	White phosphorous grenades
8/26/74	TW	707	On ground, Rome	Aft baggage compartment	Fire, confined to local area; no casualties	c-4
9/8/74	TW	707	Over Ionian Sea	Aft baggage compartment	High-order explosion; 88 killed, aircraft lost	—
2/3/75	PA	747	In air, Burma	Lavatory (suicidal passenger set fire)	Extinguished by crew; minimum damage	Petrol and butane
12/19/75	—	Alouette Helicopter	On ground	Near fuel tank	\$10,000 damage to aircraft	Blasting caps
7/2/76	EA	Electra	Parked next to fence	External, near right landing gear	Explosion and fire destroyed main fuselage	Dynamite (8-10 sticks)
7/5/76	—	Helicopter	On ground	External, under tail	Extensive damage	Dynamite

SOURCE: FAA Civil Aviation Security Service

Table 65.—Location of Explosions Aboard Aircraft, 1949-76

Location of explosion	Worldwide		U.S. aircraft	
	Number	Percent	Number	Percent
stowed	13	21		21
Baggage	(8)	-	(4)	-
Cargo or freight	(5)	-	-	-
Ground attack	5	8	4	21
External attachment	7	11	3	16
Passenger or crew compartment	33	52		42
Lavatory	(10)	-	(4)	-
Passenger compartment	(19)	-	(2)	-
Cockpit	(4)	-	(2)	-
Unknown	5	8	0	0
Total	63	100	19	100

SOURCE: Data supplied by FM Civil Aviation Security Service.

Table 66.-Explosions and Devices Found at U.S. Airports, 1972-75

(late	Airport	Location	Effects	Comment	Device
3/7/72	Kennedy	Cockpit of TWA 8-707	No explosion	Detected by dog	c-4
3/8/72	Seattle	Baggage compartment (UAL flight)	No explosion	Extortion attempt; timer stopped	Gelatin dynamite in aerosol cans, blasting caps
11/19/72	Denver	Attache case carried by individual	No explosion	Individual stated intent to blow up plane	8 sticks of dynamite
3/24/72	San Carlos, Calif.	Hanging from belly of helicopter	Hole in ground at remote location	Removed by police	3 sticks of dynamite, timer and detonators
12/1/72	Grand Rapids, Mich.	Paper towel container in terminal	No explosion	Device extinguished after emitting smoke	—
12/31/72	Austin	Concession area	Moderate damage	—	Incendiary (gasoline)
3/20/73	Los Angeles	On runway during approach of Continental Airlines plane	None	Thrown by individual on field	Molotov cocktail
3/29/73	Milwaukee	Locker	1 injury-moderate damage	Extortion attempt	—
8/9/73	Los Angeles	Locker	Did not detonate	Extortion attempt/located by dogs	—
1 1/30/73	Nashville	Locker	Did not detonate	Extortion attempt	Smokeless powder, timer, initiator
3/1/74	Kennedy	Locker	3 injured-moderate damage	—	—
7/21/74	New Orleans	(unknown)	No explosion	Removed by bomb squad	3-in long bamboo with powder and fuse
8/1/74	Kennedy	Cargo building	No explosion	Removed	Cardboard container with explosive powder, fireworks fuse
8/6/74	Los Angeles	Locker	3 killed, 34 injured	—	—
8/9/74	Johnstown-Camoria, Pa.	Hangar	Hangar and aircraft destroyed	—	Probable incendiary (in 55-gal drum)
8/26/74	O'Hare	Men's room	Commode damaged	—	Probably firecrackers
9/16/74	Boston	Airline baggage room	Substantial damage	Bomb was in an unclaimed suitcase destined for Tel Aviv	Incendiary (?)
3/15/75	San Francisco	Near ticket counter	Minor damage	—	Probably firecracker
3/22/75	Honolulu	Lost & found baggage area	Oid not detonate	—	Crude pipe bomb
3/27/75	Kingsford, Mich	Storage area	No explosion	Removed	—
7/22/75	Tampa	Baggage cart	1 injured	—	Firecrackers
10/17/75	Miami	Locker	Lockers and ceiling destroyed	—	—
10/20/75	Miami	Dominican Airlines office	No explosion	Discovered by janitor; disarmed by bomb squad	Time bomb
11/6/75	Buffalo	Baggage claim area (2 bags)	No explosion	Checked bags unclaimed after flight; timers turned off (inadvertently)	Black powder and gasoline
11/27/75	Miami	Bahamasair aircraft. Behind wall panel in lavatory	No explosion	Removed	—
12/29/75	La Guardia	Locker	11 killed, 70 injured; substantial damage	—	Dynamite and RDXa

^aFAA estimate Other agencies disagree with this assessment

SOURCE FM Civil Aviation Security Service

Table 67.-Results of Civil Aviation Security Program Passenger Screening

	1972	1973	1974	1975
Passengers (millions)	192	203	201	202
Passengers denied boarding.	8,265	3,459	2,663	(a)
Referrals to law enforcement	(a)	(a)	(a)	12,270
Persons arrested.	3,658	3,156	3,501	2,464
Aviation offenses detected				
Carrying weapons or explosives aboard aircraft . . .	774	736	1,147	1,364
Giving false information	244	658	1,465	227
Weapons detected				
firearms.	1,313	2,162	2,450	4,783
Explosive devices ,	13	3,459	14,9280	158
Ammunition, fireworks.	(a)	(a)	(a)	17,047
Knives	10,316	23,290	21,468	46,318
Other.	3,203	28,740	28,864	55,830

^aData not collected in this form.^bThis figure is a piece count which includes fireworks and ammunition.

SOURCE: First, Second, and Third Semi-Annual Reports to Congress on the Effectiveness of Passenger Screening Procedures, FM Civil Aviation Security Service.

Table-68.-Pramatura Detonation Statistics

Year	Incidents	Injuries	Deaths
1974	29	31	11
1975	37	53	2
1976	42	42	11
1977,	29	34	2
1978,	33	43	5

SOURCE: FBI data.

BOMBING INCIDENTS BY TARGET

Target	Total Actual Attempted Bombings	Actual		AU		Property Damage (Dollar Value)	Personal Injury	Death
		Explo.	Unexpl.	Explo.	Incend.			
TOTAL	2,044	893	758	236	157	1,886,563	207	24
Residence								
Private Residence		110	232	25	53	631,544	17	....
Apartment House	61	11	41	2	7	278,140	12	1
Other Private Property	79	55	20	4	....	20,992	2	....
Commercial Operations	45a							
Commercial Building	356	143	143	43	27	1,321,325	18	1
Office Building	38	16	13	4	5	689,075	....	....
Industrial Building	30	17	7	4	2	268,620	1	....
Theater	22	9		4	1	22,400	7	....
Motel and Hotel	12	7	:	....	2	135,600	1	....
Vehicles	257							
Auto	182	84	56	29	13	134,900	6	1
Other Vehicle	73	31	29	11	2	234,255	4	....
Aircraft	2	1	....	....	1	80,000	....	....
School Facilities	187	91	69	16	11	641,946	24	....
Public Safety	72							
Law Enforcement	69	18	38	8	5	214,310	4	....
Fire Department	3	....	....	....	3	....	....	....
Public Utilities	63	54	1	8	....	701,120	3	....
Persons	44	21	3	17	3	38,950	34	6
Recreation Facilities	38	24	s	8	1	25,980	....	....
Transportation Facilities	37	13	14	7	3	223,278	28	3
Government Property	36							
Federal	10	6	2	2	....	65,900	....	....
State	8	3	3	1	1	44,150	....	....
Local	18	11	3	4	....	13,320	1	....
Construction Sites and Equipment	30	22	s	2	1	490,450	....	....
Telephone Facilities	20	17	2	1	....	69,323	....	....
Other Communication Facilities	3	....	2	....	1	9,000	....	....
Military Facilities	19	8	2	s	4	49,842	....	....
Churches	15	5	8	1	1	97,200	....	....
Postal Facilities and Equipment	15	8	1	3	3	623	1	....
International Establishments	10	6	1	2	1	113,750	2	....
Court Houses	7	2	4	1	....	47,750	....	....
Medical Facilities	5	1	1	3	....	100	....	....
Newspaper Facilities	1	1	....	....	....	2,500	....	....
Open Area	117	54	39	18	6	595	11	1
Unknown (Premature Detonation)	29	29	....	....	....	3,325	31	11
Other	21	15	3	4	....	216,300	....	....

BOMBING INCIDENTS BY TARGET

Target	Total Actual and Attempted Bombings	Actual		Attempt		Property Damage (Dollar Value)	Personal Injury	Death
		Explo.	Incend	Expla	Incend			
TOTAL	2,074	L & L	X	238	135	27,003,961	326	99
Residences.	582							
Private Residence	384	115	199	24	46	398,586	28	18
Apartment House	77	27	36	10	4	284,470	19	2
Other Private Property	121	92	20	8	1	37,365	....	....
Commercial Operations.	485							
Commercial Building	387	214	108	42	23	4,465,308	90	20
Office Building	39	25	7	1	....	679,380	6	....
Industrial Building	37	22		6	3	14,528,588	7	1
Theater	12	9	:	....	1	62,300	....	....
Motel and Hotel	10	s	4	1	....	20,160	....	....
Vehicles	273							
Automobile	201	96	54	32	19	191,059	9	2
Other Vehicle	69	37	16	13	3	1,049,145	1	1
Aircraft	3	1	....	2	....	10,000	....	....
School Facilities	165	87	40	18	12	833,	8	....
Law Enforcement.	76							
Building	22	12	7	1	2	313,225	1	1
Vehicle	33	11	12	7	3	30,8	4	....
Other	21	8	8	4	1	9,860	s	1
Government Property.	62							
Federal	24	14	4	s	1	334,300	....	....
State	11	7	2		1	101,100	2	....
Local	27	16	7	:	1	84,284	....	....
Persons	43	28	4	12	1	59,625	29	10
Public Utilities.	41	33	1	6	1	252,375	....	....
Recreation Facilities.	33	21	4	4	4	35,390	4	....
Telephone Facilities	26	26	....	....	....	13,333	....	....
Other Communication Facilities.	6	5	1	....	....	11,060	....	....
Transportation Facilities.	25	15	7	3	....	886,800	53	11
Construction Sites and Equipment, . . .	20	11	3	4	2	713,000	....	....
Postal Facilities and Equipment	17	13	2	1	1	5,840	....	....
Churches	16	2	12	2	....	5,730	....	....
Military Facilities.	14	4	s	4	1	154,209	....	....
International Establishments	11	10	1	....	....	87,846	4	....
Medical Facilities.	10	8	i	1	....	39,300	....	....
Courthouses	4	3	....	1	....	6,515	....	....
Newspaper Facilities	1	1	....	....	....	100	....	....
Open Area.	101	55	27	15	4	580	4	....
Unknow (Premature Detonation).	37	36	1	....	....	35,573	u	2
Other	26	21	4	1	....	24,270	2	....

1976

Target	Total Actual and Attempted Bombings	Actual		Attempt		Property Damage (Dollar Value)	Personal Injury	Death
		Exple.	Incend.	Exple.	Incend.			
TOTALS	1,570	952	405	118	8	11,265,468	212	50
Residence	433							
Private Residence	281	82	135	26	138	30,501	13	8
Apartment House	40	15	20	2	3	622,360	6	....
Other Private Property	112	92	7	12	1	58,976	2	....
Commercial Operation	335							
Commercial Building	279	136	90	31	22	3,350,711	23	1
Office Building	21	9	9	1	2	254,925	....	....
Industrial Building	23	13	4	4	2	612,550	2	1
Theater	7	7	....	....	....	13,300	2	....
Motel and Hotel	8	3	2	....	....	319,500	....	....
Vehicles	192							
Automobile	142	75	35	18	14	161,071	4	2
Other Vehicle	48	25	12	8	3	126,368	....	....
Aircraft	2	2	....	....	....	1,075,000	1	....
School Facilities	126	75	31	14	6	361,683	7	....
Law Enforcement	47							
Building	10	6	2	1	1	4,975	....	....
Vehicle	17	5	8	1	3	34,310	....	....
Other	20	5	6	8	4	75,443	7	1
Government Property	38							
Federal	13	7	1	4	1	5,939	....	....
State	6	4	....	1	1	360,005	....	....
Local	19	12	8	1	1	265,445	1	....
Persons	82	37	4	32	9	623,450	59	22
Public Utilities	28	20	5	3	....	177,973	1	1
Recreation Facilities	21	15	4	2	....	6,070	1	....
Telephone Facilities	25	24	....	1	....	17,722	....	....
Other Communication Facilities	2	1	1	....	....	350	....	....
Transportation Facilities	14	9	....	3	2	29,388	1	....
Construction Sites and Equipment	26	21	2	2	1	566,150	....	....
Postal Facilities and Equipment	26	23	1	2	....	17,504	....	1
Churches	10	7	1	1	1	46,250	1	....
Military Facilities	5	3	2	....	....	15,350	....	....
International Establishments	10	5	....	4	1	150,350	4	....
Medical Facilities	4	2	1	....*	1	625	....	....
Courthouses	5	8	....	....	....	1,122,030	21	....
Newspaper Facilities	2	2	....	....*	....	....	1	....
Open Area	77	48	16	8	5	1,362	9	1
Unknown (Premature Detonation)	42	42	....	....*	....	3,950	42	11
Other	20	15	1	1	3	443,335	3	t

Table 3: BOMBING INCIDENTS TARGETS, 1977

Target	Total Actual and Attempted Bombings	Actual		Attempt		Property Damage (Dollar Value)	Personal Injury	Death
		Explo.	Incend.	Explo.	Incend.			
TOTAL	1,318	867	243	118	85	3,943,300	192	22
Residences	292							
Private Residence	193	66	76	13	18	466,719	9	1
Apartment House	21	9	9	1	2	1,655	1	....
Other Private Property	78	99	4	3	2	16,130	2	....
Commercial Operations	282							
Commercial Building	186	111	44	23	8	1,460,145	20	2
Office Building	28	16	3	6	....	247,775	6	1
Industrial Building	28	18	2	4	1	572,648	1	....
Bank	26	15	3	2	5	408,429	....	....
Theater	11	7	1	2	1	209,810	....	....
Motel and Hotel	6	5	....	1	....	651,200	....	....
Vehicles	178							
Automobile	119	87	17	9	6	221,564	3	....
Other Vehicle	47	23	16	3	3	191,887	....	....
Aircraft	9	2	5	....	2	100	....	....
School Facilities	100	70	15	12	3	546,368	5	....
Law Enforcement	36							
Building	13	7	2	....	4	8,388	2	....
Vehicle	5	2	2	....	1	12,200	....	....
Other	18	9	3	....	6	9,500	2	....
Government Property	66							
Federal	13	12	....	1	2	59,425	....	....
State	11	10	....	1	....	18,250	....	....
Local	40	33	5	2	....	179,140	....	....
Persons	78	49	7	13	9	270,996	62	14
Public Utilities	28	20	1	4	1	1,524,000		....
Recreation Facilities	17	14	2	....	1	14,125	1	....
Telephone Facilities	13	13	....	....	....	12,200	....	....
Other Communication Facilities	1	....	1	....	....	300	....	....
Transportation Facilities	23	18	2	2	1	342,300	1	1
Construction Sites and Equipment	32	27	5	....	....	356,475	....	1
Postal Facilities and Equipment	15	11	1	3	....	3,037	....	....
Churches	6	4	1	....	1	79,560	....	....
Military Facilities	9	4	1	4	....	400	....	....
International Establishments	3	2	....	....	1	28,300	....	....
Medical Facilities . . . . .	....	....	....	....	....	....	....	....
Courthouse	4	4	....	....	....	110,450	1	....
Newspaper Facilities	2	1	1	....	....	3,200	....	....
Open Area	78	38	13	5	2	1,380	7	....
Unknown (Premature Detonation)	29	29	....	....	....	7,780	34	2
Other	29	21	3	....	5	189,102	2	....

Table 3: BOMBING INCIDENTS TARGETS, 1978

Target	Total Actual or Attempted Bombing	Actual		Attempt		Property Damage (Dollar Value)	Personal Injury	Death
		Explo.	Incend	Explo	Incend			
TOTAL	1,301	768	349	105	79	3,161,485	135	18
Residences	341							
Private Residence	216	84	98	11	23	547,775	14	2
Apartment House	53	20	25	1	7	57,330	5	...
Other Private Property	R	59	7	5	1	36,813	4	...
Commercial Operations	270							
Commercial Building	180	lot	61	8	10	1,870,420	15	...
Office Building	2X	14	5	2	...	1,854,731	...	...
Industrial Building	30	17	7	4	2	220, 27s	1	...
Bank	18	15	2	1	...	114,902	0...	...
Theater	10	7	1	1	1	24,000	3	...
Motel or Hotel	11	2	2	7	...	75,200	...	...
Vehicles	178							
Automobile	142	7s	46	7	14	142,366	5	...
Other Vehicle	36	17	13	4	2	631,300	...	...
Aircraft	.....	.....	.....	.....	.....	.....	.....	.....
School Facilities	101	7s	18	4	4	877,862	8	...
Public Safety	41							
Law Enforcement	38							
Building	11	5	5	1	...	33,350	2	1
Vehicle	23	11	6	2	4	24, 310	...	...
Other	4	3	.....	.....	1	2, 500	1	...
Fire Department and Equipment	3	3	.....	.....	.....	5,670	.....	.....
Government Property	31							
Federal	11	7	1	2	1	17, 07s	.....	...
State	2	2	.....	.....	.....	200	.....	.....
Local	18	12	5	.....	1	51,340	.....	.....
Persona	61	29	8	19	5	121,295	21	9
Public Utilities	31	21	5	5	...	372,800	1	...
Recreation Facilities	19	14	3	2	...	89,785	.....	1
Telephone Facilities	21	1s	3	3	...	9,220	1	...
Other Communication Facilities	2	1	1	.....	.....	17s, 000	.....	...
Transportation Facilities	37	29	5	2	1	261, 980	2	...
Construction Sites and Equipment	10	7	3	.....	.....	1, 28S, 450	.....	...
Postal Facilities and Equipment	14	13	.....	1	.....	5,589	.....	...
Churches	9	6	3	.....	.....	7,480	.....	...
Military Facilities	7	5	2	.....	.....	26,900	.....	...
International Establishments	7	3	1	3	.....	12, 0s0	3	...
Medical Facilities	3	1	2	.....	.....	2,060	.....	...
Courthouse	3	1	.....	2	.....	.....	.....	...
Newspaper Facilities	5	s	.....	.....	.....	13,960	.....	...
Open Area	46	31	8	5	a	101,035	3	...
Unknown (Premature Detonation)	33	32	1	.....	.....	7,150	43	5
Other	31	26	2	3	.....	112, 240	3	...

Table 69.—Commercial Airliner Hijacking Statistics by Year

Year	Hijackings U.S. origin	Hijackings foreign origin
1949-67	9	45
1968	15	14
1969	36	48
1970	20	50
1971	24	29
1972	27	29
1973a	1	17
1974	3	17
1975	3	11
1976	4	15
1977	5	NA ^c
1978	8	NA

^aU.S. antihijacking measures became fully effective^bU.S. airlines, irrespective of point of origin.^cNot available

SOURCE: FAA report No. FAA-RD-77-66.

Table 5.—Hijacking and Associated Bombing Costs for U.S. and Foreign Airlines by Flight Origination (hijacker and bomber fataltiasat\$300,000 each)

Year	No.	U.S. originations			No.	Foreign originations		
		Total costs, \$millions	Enplanements, millions	Cost per enplanement (dollars)		Total costs, \$millions	Enplanements, millions	Cost per enplanement (dollars)
1949	0	\$ 0.00	18.0	\$0.000	3	\$ 0.23	10.0	\$0.023
1950	0	0.00	20.7	0.000	3	0.01	12.0	0.001
1951	0	0.00	26.8	0.000		0.01	17.0	0.000
1952	0	0.00	29.7	0.000	;	0.61	18.0	0.034
1953	0	0.00	29.7	0.000		0.00	20.0	0.000
1954	0	0.00	38.2	0.000	;	0.00	23.0	0.000
1955	0	0.00	45.0	0.000	0	0.00	26.0	0.000
1956	0	0.00	49.6	0.000	0	0.00	31.0	0.000
1957	0	0.00	53.3	0.000	0	0.00	37.0	0.000
1958	1	7.41	53.1	0.140	6	7.07	38.0	0.186
1959	0	0.00	60.3	0.000	6	0.33	42.0	0.008
1960	0	0.00	62.3	0.000	7	0.93	48.0	0.019
1961	4	0.19	63.0	0.003	6	1.47	53.0	0.028
1962	0	0.00	67.8	0.000	2	0.07	58.0	0.001
1963	0	0.00	77.4	0.000	1	0.00	64.0	0.000
1964	0	0.00	88.5	0.000	0	0.00	73.0	0.000
1965	4	0.00	102.9	0.000	0	0.00	77.0	0.000
1966	0	0.00	118.1	0.000	3	0.63	91.0	0.007
1967	0	0.00	142.5	0.000	4	0.01	101.0	0.000
1968	15	0.13	162.2	0.001	14	0.45	115.0	0.004
1969	36	0.54	171.9	0.003	48	6.59	134.0	0.049
1970	20	0.77	169.9	0.005	50	60.95	141.0	0.432
1971	24	1.01	173.7	0.006	29	6.43	159.0	0.040
1972	27	2.40	191.4	0.013	29	11.01	176.0	0.063
1973	1	0.00	202.2	0.000	17	52.06	201.0	0.259
1974	3	0.93	207.5	0.004	17	29.12	216.0	0.135
1975	6	0.38	205.1	0.002	11	0.81	228.0	0.004
1976	4	0.68	223.3	0.003	15	18.15	247.0	0.073
Total	145	\$14.44	2,858.3	\$0.005	275	\$196.95	2,456.0	\$0.080

SOURCE: BATF

Table 70.—Possible Perpetrator Response Countermeasures to Taggant Program

Countermeasures	Criminal		Terrorist			Mentally disturbed			Other	
	Unsophisticated	Sophisticated	Political	Separatist	Reactionary	Disenchanted	Vengeful	Pathological	Vandals	Experimenters
Taggant removal	— ^a	M	M	H	L-M	—	—	—	—	L-M
Fabrication of explosives.	L	H	H	M	M	L	L	L	L	L-M
Incendiary devices.	H	—	L	L	M	M	M	M	M-H	L-M
Use of blasting agents if untagged.	L	H	H	M	M	L	L	L	L	M
Theft, commercial	M	H	M-H	M-H	L-M	L-M	L-M	L-M	—	M
Theft, military	L		L	L	L	—	—	L	—	—
Illegal sources.	L	H	H	H	—	—	—	—	—	—
Use of explosives manufactured before implementation of tagging	L	H	M	L	—	—	—	—	—	—
Vapor seals.	—	L-M	L-M	—	L	—	—	L	—	—
Other tactics	—	L-M	H	H	H	—	L-M	M	—	—

^aUnlikely to be attempted^bLetters indicate possibility of success in the attempted countermeasure. L = low; M = medium; H = high.

SOURCE: Office of Technology Assessment