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federal FIRE EXPERIENCE

FY 1966

FEDERAL
FIRE
COUNCIL

Detailed



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MAY 9 1966
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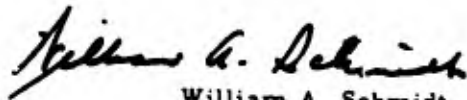
PREFACE

The purpose of this report is to make available the Federal fire loss information for Fiscal Year 1966 for evaluation and study. Recognition of the need for this basic reference data has resulted in the Council's issuing this information for over 30 years. The authority for issuance of this report is contained in Executive Order No. 7397.

For the second straight year the Council is publishing both a condensed report and a detailed report. The condensed version touches on major factors of interest and presents a brief overall analysis. The detailed version includes the background information upon which the analysis was based. Again, as was the case last year, the detailed report will be sent to all agency principal members and will be available in limited quantities to those using the form provided.

The continuing toll of lives and property losses due to unwanted fire definitely points out the need for all Federal agencies to review and evaluate their own programs for desired improvements. The Council believes that this report will help in this evaluation. In turn, you can help us by sending comments and suggestions on how this report can be improved to meet your needs.

The Council is indebted to Mr. L. B. Hicks, Department of the Navy, Chairman of the Committee on Fire Loss Experience, and to the members of the Committee for their excellent work in preparing this report.



William A. Schmidt
Chairman
Federal Fire Council

INTRODUCTION

The FY 1966 fire loss of \$235 million, 323 deaths and 1,452 injuries points out the need for improvements in the Federal Government's fire safety program. Losses are set forth in six categories. Buildings and Contents fire losses are common to all agencies. The other categories are specialized and should be of concern to those agencies having missions embracing similar fire loss potential.

The loss figures on "Buildings and Contents" and "Forest, Grass, and Tundra" categories reflect a high degree of accuracy. However, the report is partially incomplete in the "Aerospace Vehicles" category, particularly due to absence of narrative descriptions of major losses; in "Contractors Custody" due to the failure of some agencies in reporting insured losses; and in "Shipboard" categories due to incomplete statistics and lack of narrations of large losses. Indirect losses ("All Others" category), such as compensation, medical, tort claims, private relief bills, compromise settlements, contingency losses, etc., are also incompletely reported. The members of the Fire Loss Experience Committee and the staff have been and will continue to work toward elimination of these incomplete reporting areas.

This is the second year we have issued a condensed report as well as a detailed report. Comments have been favorable. We believe the condensed report is helpful to the busy executive.

The Committee will issue special reports of significant or unusual fires and studies as information becomes available. These will be tailored to give advice and assistance to agencies in meeting current or anticipated fire safety problem areas.

The FY 1966 report includes the loss experience of 58 Federal departments and agencies. These organizations control approximately 99.9 percent of the total Federal property valuation of over \$347 billion.

Data in the reports regarding deaths, injuries, and monetary losses do not include extrapolations. The figures are actual losses taken directly from Federal Fire Council Form 9 reports or news media.

Annual reports, prepared by the Committee on Fire Loss Experience, are the only consolidated source of information on fire safety experience of U.S. Government establishments located throughout the World. The reports are part of the public records and may be reproduced in whole or part without permission of the Council.

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SOURCES OF INFORMATION
FOR
FEDERAL FIRE EXPERIENCE
FISCAL YEAR 1966

In compiling the information contained in this report, letters were sent to all Federal agencies and departments requesting a summary of their reported fire losses for Fiscal Year 1966.

AGENCIES REPORTING FIRE LOSSES

Agriculture	Joint Chiefs of Staff (Including DASA)
Air Force	Justice
Army	Library of Congress
Atomic Energy Commission	National Aeronautics and Space Administration
Canal Zone Government	National Capital Housing Authority
Commerce	National Security Agency
Defense Supply Agency	Navy, including Marine Corps
D. C. Government	Post Office Department
Federal Aviation Agency	Smithsonian Institution
Federal Communications Commission	State
General Services Administration	Tennessee Valley Authority
Government Printing Office	Treasury
Health, Education, and Welfare	Veterans Administration
Interior	

AGENCIES REPORTING NO FIRES AND NO FIRE LOSSES

American National Red Cross	Federal Trade Commission
Architect of the Capitol	Foreign Claims Settlement Commission
Bureau of the Budget	General Accounting Office
Central Intelligence Agency	Housing and Urban Development
Civil Aeronautics Board	Information Agency, U. S.
Civil Service Commission	Interstate Commerce Commission
Defense, Office of the Secretary	Labor
Economic Opportunity, Office of	National Academy of Sciences - NRC
Emergency Planning, Office of	National Labor Relations Board
Export-Import Bank of Washington	National Science Foundation
Farm Credit Administration	Railroad Retirement Board
Federal Coal Mine Safety Board of Review	Securities and Exchange Commission
Federal Deposit Insurance Corporation	Selective Service System
Federal Mediation & Conciliation Service	Small Business Administration
Federal Power Commission	St. Lawrence Seaway
Federal Reserve System	Tariff Commission

The above reporting agencies control approximately 99.9 percent* of the Federal Government property valuation. Two agencies did not file reports.

*Source: "Federal Real & Personal Property Inventory Report (Civilian and Military) as of June 30, 1966, "Committee on Government Operations (House) 89th Congress, Second Session.

Other sources of information included news services' accounts, National Fire Protection Association reports, and Bureau of Employees' Compensation statistics.

GRAND TOTAL OF ALL REPORTED FIRE LOSSES WORLDWIDE - FISCAL YEAR 1966
• SUMMARY •

Introduction: TABLES I and II are compilations of all fire losses of Federal Property, injuries and deaths reported to the Council for Fiscal Year 1966. The majority of the forest fire losses are for Calendar Year 1965 to make maximum use of the existing reporting procedures of the various agencies.

TABLE I

ALL FIRES	No. of Fires	Amount of Loss	No. of Injuries	No. of Deaths
	18,122	\$235,367,507	1,452	323

Aerospace Vehicle - Refers to both piloted and pilotless airborne vehicles. It includes aircraft, gliders, balloons, helicopters, missiles, rockets, or combination of these vehicles, etc.

Buildings and Contents - Any type of structure as well as all equipment, vehicles, stores, supplies or materials on, under or within the structure. Does not include "open" storage yards, vehicles parked on adjacent driveways, etc.

Contractor's Custody - Federally-owned or -leased property, real or personal held by any party other than that agency or department of the Federal Government responsible for the property.

Forest Fire - Any wild-land fire not prescribed for area by an authorized plan.

Shipboard Fire - Any fire occurring within the physical confines of a ship regardless of the location of the ship, i. e., afloat, in drydock, etc.

Other - This category includes all fires occurring in property and material not included above. Some examples are fires in "open" storage, fires in automobiles, in other mobile equipment, etc.

TABLE II SUMMARY BY CATEGORIES

Federal Property Involved in Fire	No. of Fires	Amount of Loss		No. of Injuries	No. of Deaths
		Property	All Other*		
Aerospace Vehicles	466	\$198,321,257	--	205	208
Buildings & Contents	6,735	12,101,398	\$3,805,594	408	95
Contractors' Custody	269	2,284,576	11,021	15	7
Forests, Grass & Tundra (Calendar Year)	9,845	2,604,024	15,057,091	672	7
Shipboard (Partial Report)	23	14,969	--	44	5
Other	784	1,071,813	95,764	108	1
Total	18,122	\$216,398,037	\$18,969,470	1,452	323

* All Other - Includes all damage or loss not reported under "Property," i. e., indirect losses such as compensation, medical, Tort claims, and contingency losses.

TABLE III Fire Loss Experience -- Five Year Average As Compared to FY 1966

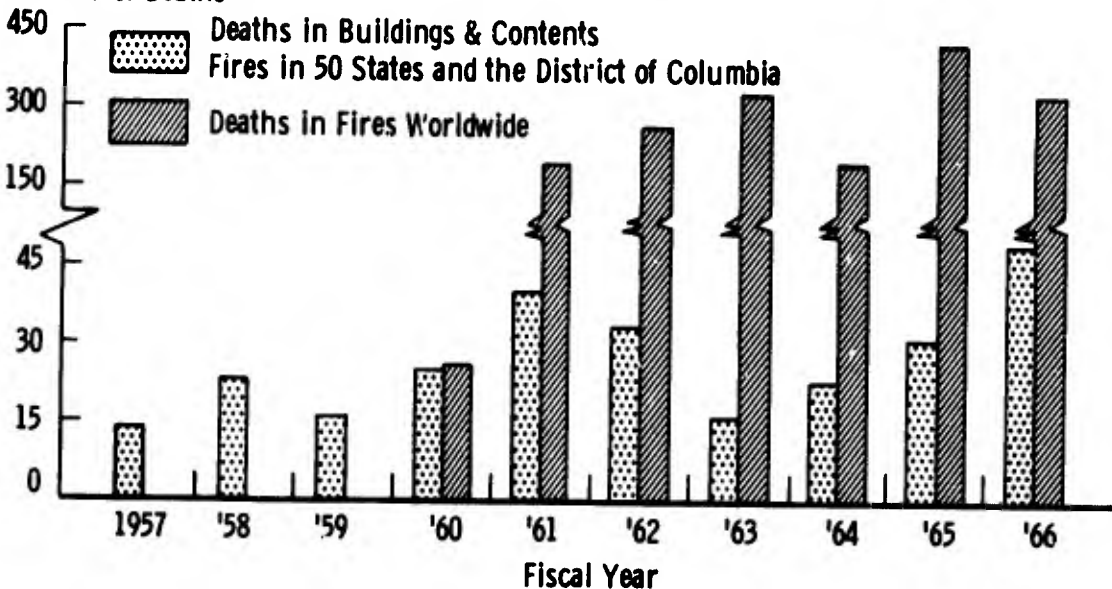
	Number Fires	Dollar Losses	Number Injuries	Number Deaths
5 Year Average	29,899	\$208,816,996	1,464	298
FY 1966	18,122	235,367,507	1,452	323
% Difference	-39.4%	+1.27%	-0.82%	+8.4%

NOTE: Decrease in number of fires partially due to changes in reporting procedures in a few agencies.

DEATHS FROM FIRES - 10 YEAR PERIOD

CHART I

Number of Deaths



Note: Reporting Statistics Expanded in 1960.

MONETARY LOSS FROM FIRES AND NUMBER OF FIRES (For Years Available)

CHART II

Loss in Millions

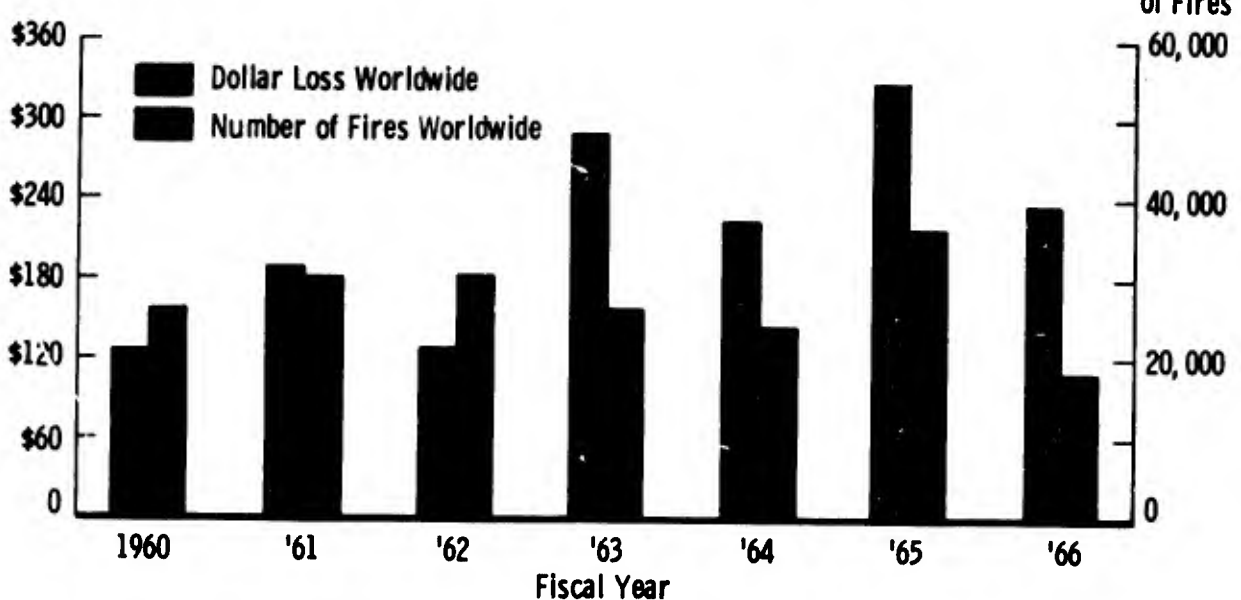
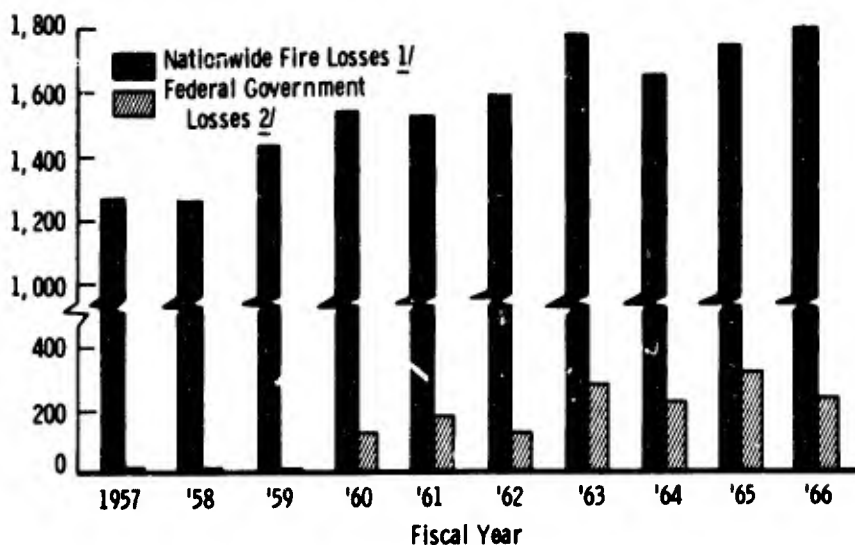


CHART III MONETARY LOSSES FROM FIRE
Loss In Millions of Dollars

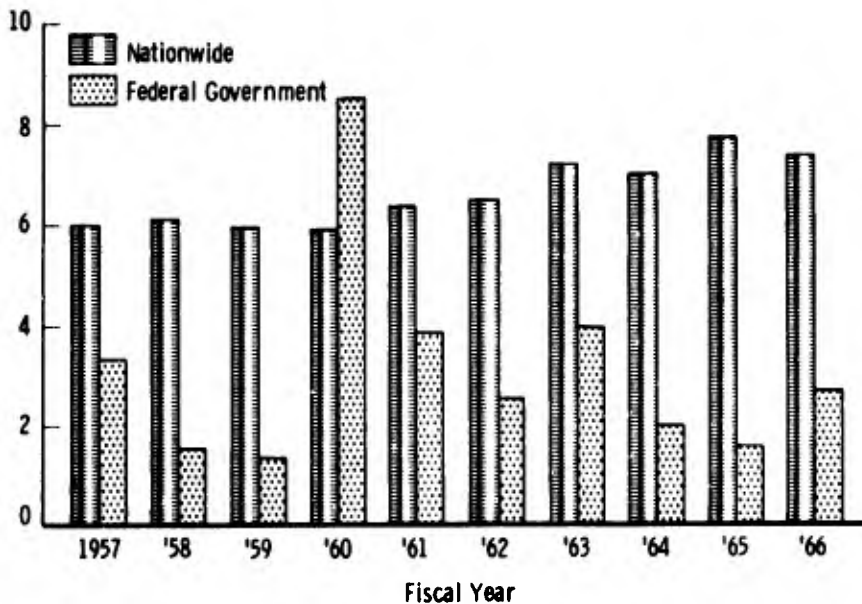


1/ Source - National Fire Protection Association (includes Fire Losses to Aerospace Vehicles, Forests, Etc.).

2/ Note: Since 1960, reflects broadened reporting base of five additional categories of fires, plus Buildings and Contents fires; also, includes worldwide operations in addition to the continental United States.

PER CAPITA FIRE LOSS TRENDS*
BUILDINGS AND CONTENTS IN U. S.
(50 States & D. C.)

CHART IV
Dollars per Capita



(*Also, see Table X1 page 22)

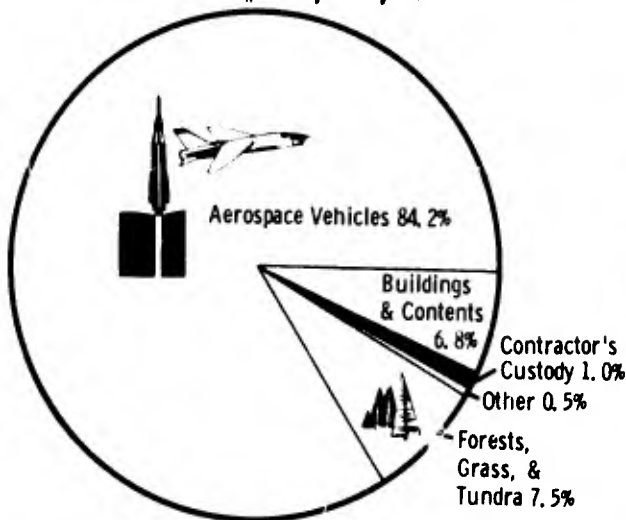
ANALYSIS OF FIRES AND MONETARY LOSSES

Comparison of FY 1966 to 5 Year Span

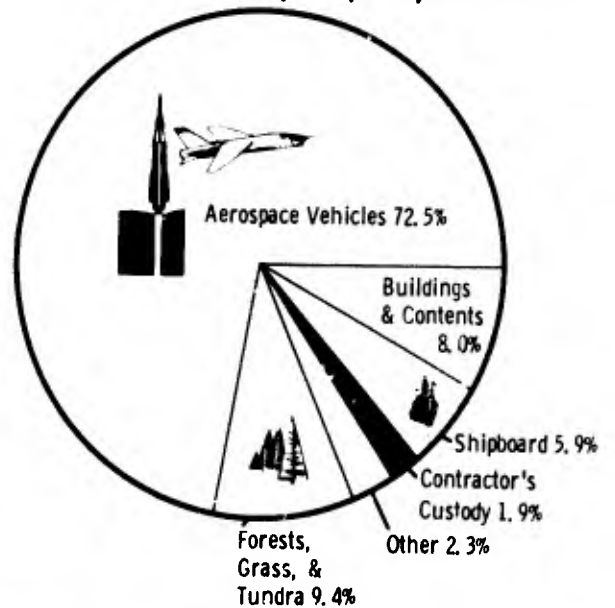
CHART V

Monetary Losses

FY 1966 = \$235,367,507

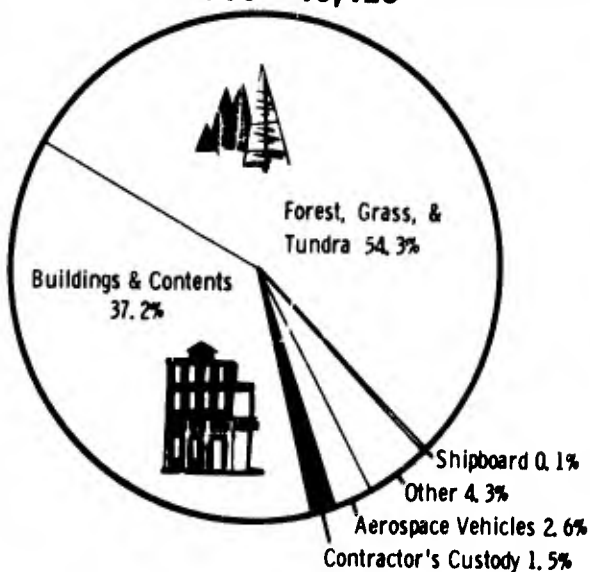


1961-1965 = \$1,044,084,982

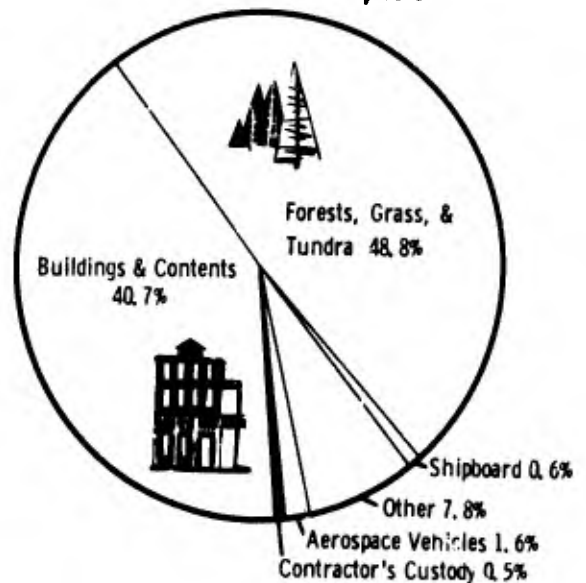


Number of Fires

FY 1966 = 18,123



1961-1965 = 149,496



RECAPITULATION OF FIRE LOSSES - FY 1966

WORLDWIDE

The following is a recapitulation of Federal fire losses by category. Data indicating number of fires, amount of loss, injuries and deaths for the past five years (including FY 1966) is shown for each category. More detailed statistical information can be found in the Appendix.

A short narrative report giving pertinent facts on some large monetary losses and significant fires causing deaths are also included for the categories. Unfortunately, writeups are not available for some categories.

CATEGORY A - AEROSPACE VEHICLE FIRES

Aerospace vehicles refers to both piloted and pilotless airborne vehicles. It includes aircraft, gliders, ballons, helicopters, missiles, rockets, or combination of these vehicles, etc.

TABLE IV

Fiscal Year	No. of Fires	Amount of Loss	Injuries	Deaths
1962	144	\$ 38,027,644	129	172
1963	428	218,498,507	220	256
1964	758	178,506,085	208	239
1965	712	285,078,231	336	351
1966	466	198,321,257	205	208
5-Year Total	2,508	918,431,724	1,098	1,226
5-Year Average	502	183,686,345	220	245

Note: See "Index to Appendices", page 21, for detailed statistical information.

Significant Fires Resulting In Fatalities and Large Losses (Over \$100,000).

A-1 Flight Take Off - 54 Dead - Loss Undetermined.

24 August 1965 - A hot intense FIRE involving OIL ON the surface of the WATER occurred when a four engine transport PLANE suddenly CRASHED in the harbor immediately after TAKEOFF. Local natives in a small boat rescued 7 of the 13 SURVIVORS. Several other passengers managed to escape from the aircraft, but either drowned or died in the flaming oil. The CAUSE of the crash was NOT REPORTED. (Overseas)

A-2 Inflight Collision and Crash - 5 Dead - Loss Not Reported.

20 June 1966. Two attack BOMBERS flying low on a training mission COLLIDED at 2050 above a shopping center. ONE CRASHED in FLAMES into a residential area, KILLING 5 persons, INJURING 25, and demolishing or damaging 17 HOMES. The aircraft CREWS ejected and were RESCUED. One plane crashed in a nearby bay. Plane wreckage and flaming debris were scattered over a 5 block area. Fires were extinguished by 2300. (U. S.)

A-3 Inflight Explosion - 1 Dead - Loss \$10,000,000 (Est.)

25 January 1966. An INFLIGHT EXPLOSION destroyed a new reconnaissance plane. The SR-71, which was capable of flying 2,000 miles per hour, was on a long distance flight, carrying two TEST pilots. ONE of the men was KILLED; the other was injured after he bailed out. No other information is available. (U. S.)

A-4 Flight Landing - Loss \$14,500,000.

22 July 1965 - A FIRE, which occurred shortly after the AIRCRAFT had touched down and WAS BREAKING to a stop, totally DESTROYED a B-38 jet. There were 40 INJURIES. The CAUSE of the fire was NOT REPORTED. (U. S.)

A-5 Maintenance Operation - Loss \$2,090,000.

MAINTENANCE operations were being conducted ON a FIGHTER type aircraft in an inside section of a four-unit connected shelter. A technician "INADVERTENTLY" pushed the WING TANKS JETTISON switch which allowed the wing tanks to fall. A loud explosion occurred and FIRE ENVELOPED the aircraft and shelter. The two million dollar AIRCRAFT was totally DESTROYED, another aircraft was severely damaged, and fire damage to the shelter was \$90,000. There were no injuries. (U. S.)

CATEGORY B - BUILDINGS AND CONTENTS FIRES

Buildings and contents are any type of structure as well as all equipment, vehicles, stores, supplies, or materials on, under, or within the structure. It does not include "open" storage yards, vehicles parked on adjacent driveways, etc. (Also see Contractors Custody, Category C.)

TABLE V

Fiscal Year	No. of Fires	Amount of Loss	Injuries	Deaths
1962	10,802	\$ 16,289,912	466	47
1963	9,439	24,166,692	478	27
1964	7,166	12,072,968	434	30
1965	17,208	11,674,257	449	34
1966	6,735	15,906,992	408	95
5-Year Total	51,350	80,110,821	2,235	233
5-Year Average	10,270	16,022,164	447	49

Note: See "Index to Appendices," page 21, for detailed statistical information.

B-1 Missile Complex - 53 Dead - Loss \$182,770.

9 August 1965 - A CONTRACTOR was making REPAIRS and alterations in an underground MISSILE SITE. A pressurized HYDRAULIC OIL LINE ruptured and the escaping vaporized oil was IGNITED by a nearby WELDING operation. The resultant fire with its suffocating fumes/vapors FATALLY TRAPPED 53 male civilian contractor employees. (U. S.)

B-2 Communication Station - 12 Dead - Loss \$1,307,800.

24 September 1965. A fire which is believed to have been CAUSED by an ELECTRICAL fault burned in a combustible CONCEALED SPACE a considerable period of time prior to discovery, was reported to the station fire department by telephone at 0235. The building was part one story and part TWO STORY and ATTIC of WOOD FRAME construction

having concrete floors, wood roof and stucco on wood exterior walls. INTERIOR FINISH was primarily COMBUSTIBLE low density fiber board and plywood. The numerous CONCEALED SPACES formed by combustible suspended ceilings and the attic were NOT provided with FIRE STOPS. SECURITY measures included LOCKED exterior DOORS and interior control fences with LOCKED GATES. ELEVEN automatic SPRINKLER systems, automatic fire DETECTING systems, adequate manual EVACUATION alarm or emergency LIGHTING were provided in the building. The probable cause of the fire was an electrical fault in a high amperage, 220 volt power cable located within a combustible concealed space. Due to the highly combustible construction, lack of fire stops and the delayed discovery, the fire SPREAD RAPIDLY throughout the building and extended to a connected unsprinklered 20' x 48' quonset. There was NO coordinated EFFORT to EVACUATE personnel and EVACUATION was DELAYED while occupants unsuccessfully attempted to fight the fire and safeguard classified material. A total of 12, including enlisted men and one officer DIED in the fire. In addition, 15 persons required hospitalization, 14 for smoke inhalation. Building damage was \$210,000 and contents loss (mainly ELECTRONIC EQUIPMENT) was \$1,095,000. (Overseas)

B-3 Dwelling - 9 Dead - Loss \$13,000.

5 February 1966. A fire occurred at 2330 in a 5 room, ONE-STORY and ATTIC FRAME DWELLING in Alaska. A total of 9 persons, ranging in age from 31 for the adult male and 8 years to 9 months for the 8 children, DIED from ASPHYXIATION. Physical location of several of the bodies indicates that attempts were made to escape but the occupants were apparently overcome by either smoke inhalation or combustion gases. The number of EXITS were DEFICIENT for this dwelling. The attic had been remodeled as a bedroom. The exit from the attic was down a stairway into a bedroom on the first floor. There was only one exit from the first floor. Evidence indicated that the FIRE started IN a clothes CLOSET under the attic stairs. The fire was well under way when discovered. It was later found that HOUSEKEEPING was extremely POOR; piles of clothing added fuel to the fire. In addition, rescue activity was hindered by INADEQUATE firefighting EQUIPMENT and LACK of technical TRAINING. This fire caused an estimated damage of \$10,000 to the dwelling and \$3,000 to personal effects. (U. S.)

B-4 Row House - 3 Dead - Loss \$15,945.

24 April 1966 - A fire was reported in a row house by radio from a passing vehicle at 0431. The row house was TWO STORY of WOOD FRAME construction having gypsum board interior finish. The HUSBAND had just returned from work, placed some food in a PAN of COOKING OIL on the electric STOVE, turned the burner on and went upstairs. His WIFE, two year old SON and three year old DAUGHTER were ASLEEP in the UPSTAIRS bedrooms. The fire was apparently caused by the COOKING OIL, IGNITING and SMOKE and FIRE quickly spreading THROUGHOUT the house. The HUSBAND managed to ESCAPE out the front door after unsuccessfully attempting to awake his family. After extinguishment by the fire department 3 family members (wife, son, and daughter) were found DEAD. Building damage was \$15,500 and government contents \$445. (U. S.)

B-5 Duplex Dwelling - 2 Dead - Loss \$7,375.

16 April 1966 - The fire was discovered and reported by the occupants of the adjoining dwelling unit at 0125. The TWO STORY, duplex dwelling was of ordinary MASONRY and WOOD JOIST construction with plaster interior finish. The FIRE originated IN the downstairs PANTRY and apparently was caused by careless disposal of SMOKING MATERIALS in a PLASTIC WASTE PAPER BASKET by the occupants prior to retiring. The responding fire department, with considerable assistance from other quarters' occupants, removed the husband, wife and 15 year old daughter from the building. All

THREE apparently had been OVERCOME by SMOKE in their second floor bedrooms while asleep. The 15 year old GIRL was REVIVED, but the TWO adults DIED. Building damage was \$6,600. Loss to government contents was \$722. (U. S.)

B-6 Warehouse - 1 Dead - Loss \$53,821.

1 January 1966. At 2100, a FIRE of UNDETERMINED ORIGIN occurred in a one-story, frame warehouse building. ONE adult male DIED as a result of BURNS received. (Overseas)

B-7 Office Building - 1 Dead - Loss \$28,000.

24 February 1966 - A male custodial EMPLOYEE had full TRASH containers on an ELEVATOR. Fire of UNREPORTED CAUSE originated in a trash container. The employee was TRAPPED in the elevator and DIED from asphyxiation. (U. S.)

B-8 Vehicle Maintenance Building - 1 Dead - Loss \$8,968.

1 June 1966 - A fire was reported in a maintenance shop building at 0925. The building was ONE HIGH STORY in height of NONCOMBUSTIBLE construction having an undivided floor area of 11,556 sq. ft. Automatic SPRINKLER protection was PROVIDED throughout the building. The diesel FUEL TANK had been drained, but had NOT been PURGED, flushed, steamed or inerted. During the welding operation, the tank EXPLODED and the welder was severely burned during the resultant fire. Four other men suffered burns on their hands and faces when they rescued the welder from the vehicle. The WELDER DIED the next day from burns received. The automatic SPRINKLERS operated SATISFACTORILY and held the fire to the vehicle. The station fire department responded and completed extinguishment with foam lines. Building damage was limited to \$342 and the damage to the vehicle and related equipment was \$8,626. (U. S.)

B-9 Office Building - 1 Dead - Loss \$3,847.

1 May 1966 - A general MECHANIC (male) was KILLED by a GAS EXPLOSION IN the combustion chamber or gas passes of a low pressure firetube BOILER at an office building of frame construction. The mechanic was attempting to start the boiler after an ignition failure. He tried once without success to operate the manual starting device. He then removed the cover of the controls and manipulated various parts. This action apparently caused GAS BY-PASSING of the SAFETY CONTROLS and allowed a considerable buildup of gas in the firebox. In some manner, possibly from reactivation of the manual starter, the gas ignited and exploded. The employee was killed when struck by hurtling parts of the boiler's front housing. The boiler had only recently been returned to operation. It was previously on standby after modification to correct earlier trouble with the automatic controls. Renewed difficulties developed just the day prior to the accident. (U. S.)

B-10 Multifamily Dwelling - 1 Dead - Loss \$2,200.

18 April 1966 - An alarm was received by telephone at 1747 reporting a fire in one unit of a FOUR UNIT APARTMENT building. The building was ONE STORY, 105' x 20' of WOOD FRAME construction having stucco exterior, gypsum board interior finish and asbestos shingles on a wood roof. The MOTHER had placed a pan of COOKING OIL on the electric RANGE, had LEFT the unit and was visiting a neighbor. A three month old baby GIRL and a four year old BOY were left ALONE in the unit UNATTENDED. The pan of COOKING OIL apparently over heated, IGNITED, and the resultant fire SPREAD rapidly THROUGHOUT the kitchen and adjoining living room.

The BABY was RESCUED from a couch in the living room by a neighbor who broke through a window. The BOY was RESCUED unharmed from his bedroom. The BABY DIED three days later from third degree burns on 50% of her body. A male neighbor suffered first degree burns on both feet while attempting to fight the fire. (U. S.)

B-11 Row House - 1 Dead - Loss \$318.

4 May 1966 - A FLASH FIRE occurred in a two story, wood frame row house at 1755. GASOLINE was being used to CLEAN a paint brush in the kitchen of one of the units. Evidently, the gasoline vapors were IGNITED by the PILOT LIGHT of a gas stove resulting in a flash fire. When the flash occurred, the can of GASOLINE was dropped, SPILLING gasoline on a nine year old GIRL. The mother and a neighbor burned their hands attempting to smother the fire in the girl's clothing. A FIRE EXTINGUISHER was used to put the FIRE OUT. The 9 year old GIRL DIED 21 days later in the hospital from burns received. (U. S.)

B-12 Multifamily Apartment Building - 1 Dead - Loss \$350.

13 August 1965 - A fire of UNKNOWN CAUSE occurred in the rear bedroom of Apt. No. 31 at 1400. After extinguishment by firemen, an unconscious MAN was FOUND in the closet of the bedroom. He regained consciousness enroute to the hospital, but DIED two days later. Cause of death was not reported. (U. S.)

B-13 Dwelling - 1 Dead - Loss \$8,700.

4 March 1966. At 0745 during a POWER OUTAGE, CANDLES were being used for illumination. A BOY, age 10, IGNITED his CLOTHING and DIED from the resulting burns. Damage to the frame house was moderate. (U. S.)

B-14 Dwelling - 1 Dead - Loss \$3,100.

28 November 1965. A BOY, age 5 years, was PLAYING with LIGHTER FLUID in a one story, frame dwelling. His mother was in another part of the house. Near the playing boy was an ELECTRIC IRON, which was turned on and unattended. In some manner the lighter fluid FUMES were IGNITED. The BOY was KILLED in the resultant fire. Cause of death was reported as ASPHYXIATION. (U. S.)

B-15 Dwelling - 1 Dead - No Loss Reported.

28 March 1966 - At approximately 0620 a fire occurred in a frame dwelling, resulting in the DEATH of a 17 month old GIRL. The fire is believed to have been caused by CHILDREN PLAYING with MATCHES. (U. S.)

B-16 Hospital - 1 Dead - Loss Not Reported.

18 August 1965 - An adult male PATIENT in a WHEEL CHAIR, who VIOLATED SMOKING REGULATIONS, dropped a lighted MATCH on his BATHROBE. The bathrobe ignited and the PATIENT DIED as a result of BURNS received in the resultant fire. The fire occurred at 1005 in the bathroom area of the hospital which was of FIRE RESISTIVE construction. (U. S.)

B-17 Hospital - 1 Dead - Loss Not Reported.

21 May 1966 - An adult, male, INCOMPETENT PATIENT DIED as a result of a fire which involved the patient's CLOTHING. The CAUSE of the fire was reported as careless SMOKING. The fire occurred in the day room area of a FIRE RESISTIVE hospital. (U. S.)

B-18 Hospital - 1 Dead - Loss Not Reported.

9 March 1966 - One adult male PATIENT DIED as a result of his CLOTHES catching on FIRE while he was SMOKING in a WHEEL CHAIR. The fire occurred at 1840 in a FIRE RESISTIVE hospital building. (U. S.)

B-19 Hospital - 1 Dead - Loss Not Reported.

23 February 1966 - One adult male PATIENT DIED as a result of his CLOTHING catching on FIRE. Cause of the fire was reported as careless SMOKING. The fire occurred at 2150 in a recreation hall of a FIRE RESISTIVE hospital building. (U. S.)

B-20 Roll Paper Building - 1 Dead - Loss \$945.

3 January 1966 - At 1613, FIRE of unreported origin FLASHED across PROPELLANT in an even speed roll mill. The structure was one story in height having 5,300 sq. ft. with a concrete conductive floor, corrugated cement asbestos on steel walls, concrete interior partitions and a metal roof. ONE adult male was FATALLY BURNED and three other adult males received burn injuries in the flash fire. The high speed automatic DELUGE SPRINKLER system operated SATISFACTORILY and immediately EXTINGUISHED the fire in addition to transmitting a signal to the station fire department. Building damage was \$590 and content damage was \$155. (U. S.)

B-21 Missile Launching Pad - 1 Dead.

7 February 1965 - A military fire department received a request for assistance from another nearby military installation at 1135. A SMOKY, persistent type FIRE had occurred in an UNDERGROUND MISSILE launching PAD. The responding civilian FIRE CHIEF DIED, most probably from a HEART ATTACK, at the scene while performing his duties. (Overseas)

B-22 Office Building - Loss - \$495,317.

5 November 1965 - A fire of UNKNOWN CAUSE occurred in an office building at 2017. The fire was discovered by a local national engaged in janitorial duties who did not speak English. A DELAY OCCURRED, due to the LANGUAGE PROBLEM, in reporting the fire to the station fire department. The fire was well advanced and the entire structure was involved upon arrival of the fire department. The building consisted of two UNSPRINKLERED two story and attic WOOD FRAME structures connected by a wood corridor and had a total floor area of approximately 50,000 sq. ft. The office building was totally destroyed and three other nearby buildings were slightly damaged. One Government and two local national fire fighters were slightly injured. Building damage was \$294,300 and a contents loss of \$201,017. (Overseas)

B-23 Aircraft Hangar - Loss - \$485,840.

30 November 1965 - An AIRCRAFT on final approach IMPACTED into a HANGAR. BURNING FUEL immediately engulfed both the exterior and interior of the hangar extending from ground level to the roof resulting in TOTAL INVOLVEMENT. The hangar was of combustible construction and was not provided with automatic sprinkler protection. The hangar was a total loss. (U. S.)

B-24 Warehouse - Loss - \$445,552.

27 August 1965 - A LIGHTNING STRIKE which occurred at 1640 resulted in destruction of a redistribution and marketing WAREHOUSE. The building was of concrete block construction having a total floor area of 9,690 sq. ft. The building was being used for storage

and processing of materials which although declared excess, were still being carried at acquisition value. The building damage was \$15,371 and contents loss was \$430,180. (U. S.)

B-25 Warehouse - Loss - \$407,706.

16 July 1965 - A gate guard observed dense black smoke emitting from a STORAGE BUILDING and notified the fire department at 0830. A severe FLOOD had recently occurred and the entire area was under three or more feet of water. Upon arrival of the fire department, the FIRE had already INVOLVED the ENTIRE BUILDING above the water level. The fire apparatus took suction from the flood waters and no water shortage was experienced. However, the firemen had considerable DIFFICULTY IN laying and manning HOSE LINES. The building was one story of all metal construction having 11,200 sq. ft. floor area. Interior finish was wood and plywood and the building CONTENTS were general supplies, mostly COMBUSTIBLE in nature. The severe flood had over turned and floated temporary gasoline tanks off their supports. The fire was reported as being caused when GASOLINE flooding on the flood waters was IGNITED by SPARKS from an ELECTRIC MOTOR. Building damage was \$21,936 and contents and equipment loss was \$385,770. (Overseas)

B-26 Gymnasium - Loss - \$362,539.

3 August 1965 - Fire was discovered at 2205 by a roving patrol. Upon arrival of the responding fire company, the BUILDING was COMPLETELY INVOLVED with fire coming through the roof. The building was COMBUSTIBLE, one story in height, wood on wood frame exterior walls, gypsum and wood panel interior walls, and a wood truss roof with wood decking covered by tar and asphalt shingles. Because of total destruction, the exact cause was not determined. However, subsequent INVESTIGATION revealed that the fire had originated behind an electrical distribution panel and established DEFECTIVE WIRING as the most probable CAUSE. (U. S.)

B-27 Automotive Maintenance Shop - Loss \$273,459.

10 April 1966 - The buildings was of COMBUSTIBLE construction UNSPRINKLERED, having a total floor area of 22,625 sq. ft. The fire was discovered at 0430, and was well advanced with TOTAL building INVOLVEMENT. The building was completely destroyed and CAUSE of the fire was UNDETERMINED. However, because vehicles parked alongside the building were damaged by vandalism, arson was suspected. Later investigation did not disclose the cause. (U. S.)

B-28 Electronic Trailer Van - Loss \$258,059.

8 January 1966 - An ELECTRONIC trailer VAN, not under constant attendance, was heated by a gasoline fired SPACE HEATER. A RUBBER HOSE had been substituted for the metal FUEL LINE feeding the space heater. At 1935, while the van was UNATTENDED, an explosion occurred and the resultant fire completely destroyed the van. An adjoining van and a nearby small maintenance office were also damaged. The explosion/fire was caused when the rubber hose slipped off and allowed GASOLINE to LEAK onto the floor of the van. SPARKS from the ELECTRICAL equipment which operated automatically IGNITED the GASOLINE vapor. (Overseas)

B-29 Airport Terminal - Loss \$250,000.

13 February 1966 - A GREASE FIRE which originated in the KITCHEN quickly spread through exhaust flues and the ventilating system and DESTROYED the second floor of an airport terminal including the TRAFFIC CONTROL TOWER. Contents loss included electronic communication and weather recording equipment. (U. S.)

B-30 Electronic Trailer Vans - Loss \$220,053.

19 March 1966 - A TEMPORARY SITE consisted of three ELECTRONIC trailer VANS set on blocks closely grouped around a locally fabricated WOOD connecting CORRIDOR. A field type, fuel oil fired space heater was located in the connecting corridor and was fueled with a mixture of equal parts of gasoline and fuel oil. At about 1845, an operator on duty discovered a FIRE in the vicinity of the SPACE HEATER. Available PORTABLE EXTINGUISHERS were used in an UNSUCCESSFUL attempt to extinguish the fire by occupants. The fire department was called and they extinguished the fire. (Overseas)

B-31 Jet Engine Test Cell and Control House - Loss - \$224,031.

2 July 1965 - A fire occurred in a single story, TEMPORARY, TEST CELL. Exterior walls were aluminum panels on wood framing with aluminum panels on steel truss roof. During an engine test the incoming FUEL LINE RUPTURED due to a COMPRESSOR STALL. The resultant FIRE SPREAD RAPIDLY involving both the interior and exterior of the test cell and the ground area around the control house. The building damage was \$12,200, contents including jet engine and instrumentations within the control room amounted to \$211,831. (Overseas)

B-32 Dormitory - Loss - \$195,443.

10 March 1966 - Building was of COMBUSTIBLE CONSTRUCTION with "Clements" panels (pre-fabricated panels with integral insulation for quick erection in cold climates) used for exterior walls and interior partitions. Roof was of wooden trusses with wood decking covered with combination roll roofing. The building was being REACTIVATED for occupancy. While the HEATING SYSTEM was being worked on, a BLOWER showed up as defective. The heating system was shut down and left UNATTENDED. However, the heater continued to burn and the heat build-up IGNITED oil saturated wooden SUBFLOORING and spread throughout the entire structure before it was detected. The installed fire DETECTION system had NOT been REACTIVATED. Firefighting efforts were hampered by extremely cold conditions (-24°F). (Overseas)

B-33 Recreation Building - Loss - \$188,178.

28 February 1966 - A recreation building having MULTI-OCCUPANCIES (bowling alley, snack bars, etc.) was of COMBUSTIBLE construction with asbestos shingles on exterior walls and roof. The building was UNSPRINKLERED but HAD an automatic fire DETECTING system connected to the station fire department. At 0054, the automatic fire detecting system OPERATED. Due to the combustible features of construction, and the various combustible occupancies, the FIRE SPREAD RAPIDLY throughout the entire building. The building was a TOTAL LOSS. While the exact cause of the fire was not determined, the most probable CAUSE was given as defective ELECTRICAL wiring. (U.S.)

B-34 Aircraft General Purpose Shop - Loss - \$154,594.

26 November 1965 - Fire was discovered at 0327 by a passerby when FLAMES were noted coming OUT of the ROOF in the vicinity of a ventilating duct outlet. Investigation determined that a radar test EQUIPMENT had NOT been DEACTIVATED at the end of the working day. The test equipment probably OVERHEATED and the resultant fire traveled up the walls and entered the undivided attic area DESTROYING approximately 65% of the building. The building had NO installed PROTECTIVE SYSTEMS. (U.S.)

B-35 Exchange Snack Bar - Loss - \$151,000.

20 October 1965 - A fire was caused by malfunction of a DEEP FAT FRYER control which permitted cooking grease to overheat and IGNITE. The resultant fire traveled up the GREASE DUCT, which had been DISJOINTED, allowing FLAMES to escape between CEILING AND SUB-ROOF. The building was one story, having concrete block walls, and roof trusses with a wood decking having built-up slag roof covering. Total floor area was 17,143 sq. ft. (U.S.)

B-36 Recreation Complex - Loss - \$121,600.

4 November 1965 - A RECREATION COMPLEX of a hospital consisted of a one story, UNSPRINKLERED, WOOD FRAME structure with combustible interior finish and having a floor area of 17,580 sq. ft. The building contained multi-occupancies including theater, exchange store, Post Office, beauty shop, snack bar, library, laundry/dry cleaning store, offices, etc. The building was part of a hospital complex and was INTERCONNECTED by COMBUSTIBLE covered PASSAGEWAYS with other buildings. At 0053 a FIRE originated in the postal area and SPREAD RAPIDLY through the entire building and interconnecting passageways due to the COMBUSTIBLE INTERIOR FINISH. Operations of standard FIRE DOORS at a masonry fire wall in the passageway and six automatic SPRINKLERS HALTED further spread. The fire was CAUSED by a portable ELECTRIC heater (not UL listed) and totally destroyed the recreation building and 160 feet of the 480' x 10', unsprinklered combustible covered passageway. TWO HUNDRED patients were efficiently EVACUATED from nearby HOSPITAL wards. Building damage was \$101,600 and contents loss was \$20,000. (U.S.)

B-37 Club - Loss - \$116,909.

27 June 1966 - At 0135, a police patrol radioed that a club was on fire. The building which was TOTALLY DESTROYED was mainly one and part TWO STORY, UNSPRINKLERED, WOOD FRAME construction having a total floor area of about 16,300 sq. ft. Due to total destruction, CAUSE of the fire was UNDETERMINED. Automatic sprinkler protection had been programed for the building. Building damage was \$106,040 and contents loss of \$10,869. (U.S.)

B-38 Vacant Building - Loss \$116,784.

7 April 1966 - Fire was reported at 0329 in a VACANT, TWO STORY, UNSPRINKLERED COMBUSTIBLE structure having plywood and low density fiberboard COMBUSTIBLE INTERIOR FINISH. Ground floor area was 9,500 sq. ft. The fire spread rapidly and TOTALLY DESTROYED the building. The building was NOT properly SECURED and the most probable CAUSE was determined to be ARSON by person(s) unknown. The loss of \$116,784 represented the plant account value of the building. (U.S.)

B-39 Mobile Home Dormitory - \$116,000.

5 April 1966 - At 0020 a fire completely destroyed a MOBILE home type 56-man DORMITORY and contents. OCCUPANTS of the dormitory EVACUATED WITHIN 1 1/2 MINUTES after discovery of the fire and no injuries or deaths occurred. The fire originated in a room housing a gas-fired hot water heater. The FIRE is believed to have been CAUSED BY OVERHEATING of the LOW DENSITY FIBERBOARD wall in close proximity to the heater. The heater was improperly installed. Among the DEFICIENCIES were: ELECTRICAL fixtures were installed wrong; LOW DENSITY FIBERBOARD wall and ceiling materials were used contrary to mobile home, state, and Federal REGULATIONS; and protective INSULATION was not provided around the heater. Other heaters within the area were also improperly installed. (U.S.)

B-40 Office Building - Loss - \$100,000.

11 December 1965 - ARCING in a 480Y-277 volt, 3,000 amp, air-break switchgear CAUSED a FIRE in a HIGH-RISE fire resistive office building. The fire FLASHED over entire dead front switchboard igniting insulation and other combustibles, MELTING COPPER and other soft metals and ionizing the general area of the switchboard. CAUSE of the arc was UNDETERMINED. Since the incident occurred at the very start of weekend period and full electrical service was restored within 48 hours, no serious interruption to operations occurred. However, an important air traffic computer was forced into a down period of approximately 12 hours. Repairs were complicated by the fact that the electrical equipment was on the top (11th floor) and the outage removed all elevators from service. (U.S.)

CATEGORY C - CONTRACTOR'S CUSTODY

Contractor's Custody are Federally-owned or leased property, real or personal held by any party other than that agency or department of the Federal Government responsible for the property.

TABLE VI

Fiscal Year	No. of Fires	Amount of Loss	Injuries	Deaths
1962	131	\$ 9,495,835	12	5
1963	148	3,613,360	60	7
1964	209	5,420,629	10	6
1965	179	1,180,114	11	-
1966	269	2,295,597	15	7
5-Year Total	936	22,005,535	108	25
5-Year Average	187	4,401,107	22	5

C-1 Propellant Plant - 3 Dead - Loss - \$266,413.

27 October 1965 - At 0546, solid PROPELLANT in one-story, metal frame, noncombustible constructed manufacturing plant was IGNITED by heat of FRICTION from metal spatulas in the process. In the resultant fire, 3 male contractor personnel were KILLED from burns suffered and the building was heavily damaged. (U.S.)

C-2 Experimental Hall - 1 Dead - Loss - \$1,435,000.

5 July 1965 - An EXPLOSION and FIRE occurred in a basic RESEARCH LABORATORY utilizing an electron synchrotron at 0332, resulting in subsequent DEATH of ONE and injuries to seven. The laboratory sustained major structural damage to the concrete slab roof. Major damage occurred in the area of the 500-liter capacity LIQUID HYDROGEN bubble chamber and its auxiliary equipment. FAILURE of the windows in the double CONTAINMENT SYSTEM allowed the release of hydrogen directly into the laboratory working areas. Source of ignition was not reported. Subsequent investigation has resulted in a recommendation to IMPROVE the DESIGN of the containment system. (U.S.)

C-3 Solid Propellant Research - Loss - \$115,427.

17 March 1966 - The government owned structure was occupied by a contractor engaged in SOLID PROPELLANT RESEARCH. The building was long and narrow, divided into 20 BAYS of varying sizes by CONCRETE blast walls and had a total floor area of about 26,000 sq. ft. Construction was reinforced concrete except for the roof which

was asphalt protected metal and cement asbestos on wood supports. A fire discovered by a guard at 2008, destroyed approximately 40% of the building. The FIRE was apparently caused by sparks from a CUTTING TORCH during REMODELING operations. Two of the larger bays on the destroyed end of the building were being remodeled for office purposes and the destroyed bay was being used for storage of flammable solvents in drums. In the process of remodeling, the CONTRACTOR, without government permission, had cut holes in the blast walls and CAPPED OFF the automatic SPRINKLER system in the area destroyed. Building damage was \$94,000 and contents and equipment loss was \$21,437. (U. S.)

CATEGORY D - FOREST, GRASS AND TUNDRA FIRES

Forests Fires refer to any wild-land fires not prescribed for an area by an authorized plan.

TABLE VII

Fiscal Year	No. of Fires	Amount of Loss	Injuries	Deaths
1962	16,555	\$12,203,256		
1963	12,384	6,701,005	130	19
1964	15,708	10,199,971	878	14
1965	14,839	25,634,025	579	4
1966	9,845	17,661,115	440	5
5-Year Total	69,331	72,399,372	672	7
5-Year Average	13,866	14,479,874	2,699	49
			540	10

Fatalities and Large Losses:

Fire control activities in Forests, Grass, and Tundra took the lives of seven men. A contract pilot and a smokejumper spotter were killed on 9 July 1965 when their plane crashed while dropping cargo to smokejumpers. Another contract pilot and a forestry observer were killed on 27 August 1965 during a lightning fire reconnaissance flight. One firefighter was killed by a rolling rock on 7 August 1965, one firefighter died from complications of injuries received in a helicopter crash 3 August 1965, and one firefighter died from heart failure while fighting a small lightning fire 7 September 1965.

One Federal agency reports that there were only 36 fires that were larger than 300 acres. This is a modern day low and compares favorably with 61 such fires in 1964 and a five-year average of 83. One of the largest fires on national forests was the Plum Fire on the Nebraska National Forest. It started from lightning on 5 May and burned almost 20,000 acres before it was controlled the next day. The burned area included 11,000 acres of tree plantation and was part of the largest man-made forest in the United States.

In July, there were several fires on Mount Rainier National Park. A total of 230 acres burned in the Grand Park Fire and smokejumpers and fire retardant drops were used on this fire. In the Pigeon Peak Fire, 203 acres burned. Some sections of this latter fire line were so precipitous that fixed ropes were installed for the safety of firefighters. The very steep terrain made control difficult. There was a 1600 foot difference in elevation from the bottom of the fire to the top.

About 1400 acres of high quality timber were damaged by the Oxbow fire. There was, however, a large-scale operation launched to salvage most of the damaged trees.

CATEGORY E - SHIPBOARD FIRES

Shipboard fires are any fires occurring within the physical confines of a ship regardless of the location of the ship, i. e., afloat, in drydock, etc.

TABLE VIII

Fiscal Year	No. of Fires	Amount of Loss	Injuries	Deaths
1962	10	\$ 9,600,000	72	6
1963	11	314,295	2	3
1964	56	24,329	7	5
1965	773	775,151	51	8
1966	23	14,969	44	5
5- Year Total	873	10,728,744	176	27
5- Year Average	175	2,145,749	35	5

E-1 Ship's Brig - 2 Dead - Loss Not Reported.

19 October 1965 - A FIRE occurred on a TROOPSHIP causing TWO SOLDIERS to be SUFFOCATED. The soldiers were IN the SHIP'S BRIG at the time. No other details were reported. (Overseas)

E-2 Machinery Room - 2 Dead - Loss Not Reported.

A SERIES OF FIRES swept through a LOWER DECK of an aircraft CARRIER, KILLING TWO sailors and injuring 29 others (28 sailors and 1 civilian). The two sailors died of smoke inhalation after a blaze broke out in a machinery room and spread to a generator while the ship was being refueled from a tanker alongside. The fires were extinguished in 3 hours. (Overseas)

E-3 Ammunition Locker - 1 Dead - Loss Not Reported.

13 January 1966 - A tanker, being activated from the reserve fleet, sustained a FIRE IN an after AMMUNITION LOCKER, causing at least ONE DEATH. It was reported that a yard workman had left his acetylene HOSE CRIMPED the previous afternoon, but had failed to turn off the deck manifold. When the day shift went to work the following morning, ESCAPING ACETYLENE was IGNITED from an unknown source. A chemists' certificate had been issued to the vessel 3 weeks before the fire occurred, during which time the vessel was shifted from the yard to a fitting out berth. (U. S.)

E-4 Aircraft Operations - Loss Not Reported.

12 December 1965 - The center line tank in a F4 Phantom II jet fighter's FUEL TANK was RUPTURED IN the CATAPULTING operation from a carrier, dumping 4,000 pounds of fuel and the rear part of the tank on the flight deck. The plane's AFTERBURNERS IGNITED the FUEL. Flames consumed the next plane in line and spread into an aviation store's compartment below deck, causing a small explosion. A total of 16 crewmen on the deck were INJURED by the fire. The flames were quickly extinguished. The undersection of the plane was afire. Shortly after the radar officer ejected from the plane, the fire went out and the pilot flew the plane to a land airfield. (Overseas)

E-5 Mine-sweeper - Loss Not Reported.

26 June 1966 - A wooden-hulled minesweeper heeled to starboard moments after an EXPLOSION of undetermined origin SET FIRES raging BELOW DECKS as the ship was AT BERTH. The 173-foot VESSEL later TURNED TURTLE and SANK. All of the 61 member crew reportedly escaped safely. (Overseas)

CATEGORY F - OTHER FIRES

Other fires include all fires occurring in property and material not included above. Some examples are fires in "open" storage, fires in automobiles, in other mobile equipment, etc.

TABLE IX

Fiscal Year	No. of Fires	Amount of Loss	Injuries	Deaths
1962	3,282	\$ 2,252,263	439	16
1963	4,343	2,273,836	115	13
1964	819	15,315,860	110	6
1965	3,062	3,530,954	88	27
1966	784	1,167,577	108	1
5-Year Total	12,290	24,540,490	860	63
5-Year Average	2,458	4,908,098	172	13

F-1 JP-4 Fueling Stand - 1 Dead - Loss - \$4,997.

31 January 1966 - At 1415 during tank truck FILLING operations at a JP-4 fueling stand, a fire started. The most probable cause was STATIC ELECTRICITY. TWO male contractor employees were KILLED from BURNS sustained in the fire. (U. S.)

F-2 Burn Pit - 1 Dead.

12 January 1966 - A FLASH FIRE involving GASOLINE and acetate tapes occurred in a BURN PIT at 1340. An adult male EMPLOYEE working in the burn pit DIED as a result of third degree burns over 100% of his body. (U. S.)

F-3 Combat Armored Vehicle - Loss \$187,634.

25 October 1965 - At 0630 a crew member noticed SPARKING of a flexible ELECTRICAL CABLE in the CREW COMPARTMENT of a combat loaded armored vehicle. As he reached for the fire extinguisher, the fire flared up and he and two other crew members were slightly burned before they could get out. Explosions occurred for about an hour after which the fire department cooled down the remains. The sparking was caused by a DEFECTIVE, heavy amperage, flexible CABLE which had PREVIOUSLY given TROUBLE and been TEMPORARILY FIXED with insulating TAPE. REVIEW OF the DESIGN of the flexible cable has been referred to "proper" authorities. (Overseas)

F-4 Combat Armored Vehicle - Loss - \$146,220.

8 February 1966 - At about 0648, in a remote training area, the crew of a combat loaded armored vehicle attempted to see why there was no power for starting the vehicle. A SCREWDRIVER was inadvertently TOUCHED to the main BATTERY TERMINALS. Apparently the resulting SPARK IGNITED gasoline vapors from a LEAKING FUEL line. Portable carbon dioxide fire extinguishers and the fixed extinguishing system in the vehicle

engine compartment were operated but they failed to extinguish the fire. The fire department had to wait several hours until all explosions had ceased and then cooled the debris. Fire damage to the vehicle and its contents was \$146,220. (Overseas)

F-5 Combat Armored Vehicle - Loss - \$137,778.

22 July 1965 - At 1425 an armored combat vehicle was reported on fire in a remote training area. WATER had been bled off the bottom of the vehicle GASOLINE TANKS and OVER a PIT in the ground. The vehicle was started and EXHAUST from the motor probably IGNITED the gasoline in the pit. The vehicle was moved about 50 feet before being abandoned because of fire in the driver's compartment. The fire department extinguished the fire in about 1 1/2 hours using 1,800 gallons of water and 165 gallons of foam liquid, but the vehicle was destroyed. (U.S.)

F-6 Ammunition Pier - Loss - \$129,000.

24 July 1965 - At 1234 a FIRE, caused by ELECTRICAL WIRING, occurred UNDER a 4' elevated wood loading platform of a 75' x 850', unsprinklered, TIMBER ammunition PIER. FIRE spread under the platform and was CONFINED to the 150' outboard section of the pier WITH the AID OF a six inch concrete, under-pier FIRE STOP. Revolving NOZZLES were operated THROUGH PIER nozzle OPENINGS at the fire side of the fire stop. A drop in water pressure resulted when pier hose connections were broken by a barge containing missiles as it was being moved from the pier fire area. This condition caused a delay in firefighting operations while materials on the pier were moved to permit relocation of pumpers for overboard suction. Eight pieces of fire apparatus manned by 23 firefighters and monitor nozzles on yard tugs were used. This fire provided an example of the value of concrete fire stops and deck nozzle openings for timber piers which contributed to SAVING 700 FEET of this 850' pier. (U.S.)

CONCLUSIONS

To give a clearer indication of sustained trends, the previous five years' statistical averages of fires, dollar losses, injuries, and deaths have been used to analyze Fiscal Year 1966 data. (See Table III, Page 1.) As can be seen from this comparison, there was a 39.4% reduction in the number of fires (partially brought about by changes in reporting procedures in a few agencies), an increase of 8.4% in the number of fatalities, and minor changes in injuries and dollar loss.

Certain conclusions have been set forth below to briefly summarize some of the highlights of the statistics and information contained in this report.

These conclusions should not be considered as a complete evaluation of the statistics. Each agency is encouraged to review the information in the report for application to its own fire safety program.

1. AEROSPACE VEHICLES. As in previous years, aerospace vehicles accounted for the major portion of both property loss and deaths. In FY 1966, Aerospace Vehicles accounted for approximately 84% (\$198 million) of the total government property loss and approximately 64% (208) of the total deaths. For the five year average (FY-61 through FY-65), Aerospace Vehicles accounted for 72.5% of the property loss and 73% of the deaths. This continuing high trend in both property loss and deaths definitely points out the need for a strong, comprehensive fire safety program. The recent Apollo fire incident, which occurred in FY 1967 and is not included in the report, confirms this need.

2. BUILDING & CONTENTS. Building and Contents fires accounted for approximately 6.8% (\$15,906,992) of the property loss and approximately 2% (95) of the deaths. As in previous years, a relatively small number of fires in unprotected, combustible buildings accounted for the majority of losses. Nineteen major fires (over \$100,000 each) accounted for a loss of \$5,862,664. Fourteen of these buildings were of combustible type construction and none of the 19 had automatic sprinkler protection. This definitely points out the need for improved construction and proper sprinkler protection for high value facilities.

Two fires in operational type facilities accounted for 65 deaths or approximately 63% of the total deaths in Building and Contents. Neither facility was provided with automatic sprinkler protection.

Seven housing fires resulted in a total of 18 deaths, 5 adults and 13 children. Four of the deaths were the result of cooking oil left unattended on an operating stove. Two of the deaths were the result of careless disposal of smoking materials. Two deaths were caused by misuse of flammable liquids. This points out the need for a strong home fire prevention program.

Four fires in fire resistive hospital buildings resulted in the death of 4 adult patients. In each case, the fire involved the patient's clothing and was caused by careless smoking habits. In one case, the patient was incompetent and in two cases the patients were confined to wheel chairs. This points out the need for close patient supervision.

Several fires demonstrated the value of installed fire protection systems in limiting severity of fire damage. In one, a large maintenance shop, fire was limited to one vehicle by proper operation of automatic sprinklers. There was a fatality due to the resulting explosion when a welder started working on the vehicle fuel tank without observing proper precautions. A deluge sprinkler installation operated satisfactorily in an explosives manufacturing building and curtailed fire damage. The satisfactory operation of fire doors and automatic sprinklers stopped a fire from communicating throughout a combustible recreation building complex by way of connecting passageways. And, finally, a concrete, under-pier fire stop and pier nozzle openings were used by a fire department to stop an under-pier fire in a timber constructed ammunition pier.

3. FORESTS. The Forests, Grass, and Tundra category accounted for 54.3% of the fires and 7.5% of the monetary losses. Although there was a high incident of injury in this category (over 45% of total injuries reported), only 7 deaths were reported.

IMPRESSIONS:

TABLE IV Severity Comparison—FY 1966

Category	\$ Loss/Fire	Injuries/100 Fires	Deaths/100 Fires
Aerospace Vehicle	\$425,582	44	45
Buildings & Contents	2,361	6.1	1.4
Contractor Custody	8,531	5.4	2.6
Forests, Etc.	1,790	6.8	0.071
Other	1,480	13.6	0.127
Shipboard	*	*	*

*Shipboard: The small number of fires reported in this category (due to incomplete participation) prevents a useful and meaningful analysis being made.

The following impressions were gained from reviewing the statistics and loss writeups.

AEROSPACE VEHICLES: High value losses and high loss of life are experienced in this category and they occur in a short period of time.

BUILDINGS & CONTENTS: Fires in this category are killers of children and dramatically show bad human behavior habits which breed fires. Also, fires have the potential for large destruction and loss of life in extremely short periods of time. Much better reporting is enjoyed in this category and the Council is able to make a better analysis. Fires this year point to a need for improved fire-safe construction and automatic sprinkler protection for high value and life hazard areas.

CONTRACTOR CUSTODY: The high loss and death incidence in the Contractor Custody category partly due to the high value scientific, experimental, and or research areas included. Often adequate fire procedures and/or processing has not been developed. Also, there is a tendency to report all incidents where loss of life or high monetary losses occur and to perhaps overlook other incidents.

FORESTS, GRASS, & TUNDRA: Large numbers of fires occurred with many injuries. Death loss is low and dollar loss per acre protected is low—thus indicating an excellent job of limiting severity of fires.

BUILDINGS & CONTENTS and FOREST, GRASS & TUNDRA: Fires in these categories accounted for over 91% of all fires reported—but accounted for only 14.3% of the monetary losses.

CONFINED AND/OR UNUSUAL AREAS: Two incidents show how restricted, confined, or locked facilities can introduce peculiar or unusual conditions that will greatly increase the possible severity of a fire. There are many cases in the Federal Government where peculiar conditions of construction, use, or mission introduces problems not normally encountered and/or conditions which cannot be handled in the usual manner or fashion. These conditions can also have high loss of life and large monetary potentials. They require a great deal of coordination and planning to overcome inherent deficiencies and problems.

RECOMMENDATIONS

It is recommended that all Federal agencies take positive aggressive action to strengthen their fire safety program to reduce the high fire losses with particular emphasis on the following:

1. Education and training.
2. Fire safe construction.
3. Use of protection systems and devices in high risk areas.

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GOVERNMENT FIRE LOSSES
THE 50 STATES AND THE DISTRICT OF COLUMBIA
1957 to 1966

TABLE X

For Years Ending June 30

Fiscal Year	Buildings and Contents		Number of Fires		Number of	
	Government Fire Loss	Total	\$ 100,000 or More	Injuries	Deaths	
1957	\$ 13,876,441	14,555	14	372	14	
1958	6,200,774	12,639	14	298	23	
1959	5,491,526	13,311	16	369	16	
1960	33,283,944	15,334	10	339	25	
1961	14,732,892	15,399	14	415	34	
1962	10,475,844	9,402	20	352	33	
1963	17,136,754	7,848	16	366	16	
1964	8,638,028	5,978	15	354	23	
1965	6,766,782	15,076	12	386	31	
1966	11,668,486	5,714	16	318	81	
Total	\$ 128,271,471	115,256	147	3,569	296	
10 Yr. Avg.	\$ 12,827,147	11,526	15	357	30	

BUILDINGS AND CONTENTS FIRE LOSSES
THE 50 STATES AND THE DISTRICT OF COLUMBIA
1957 to 1966

TABLE XI

For Years Ending June 30

Fiscal Year	Amount of Loss		Population		Loss Per Capita	
	Nation-Wide ¹	Government	Nation-Wide ²	Government ³	Nation-Wide	Government
1957	\$1,022,042,000	\$13,876,441	168,863,000	4,152,000	\$6.05	\$3.34
1958	1,054,270,000	6,200,774	171,832,000	4,022,000	6.13	1.54
1959	1,035,897,000	5,491,526	173,043,000	3,967,000	5.99	1.38
1960	1,060,178,000	33,283,944	179,323,000	3,912,000	5.91	8.51
1961	1,168,870,000	14,732,892	182,953,000	3,817,000	6.39	3.87
1962	1,254,433,000	10,475,844	185,822,000	4,123,000	6.48	2.54
1963	1,359,601,000	17,136,754	189,278,000	4,320,100	7.18	3.97
1964	1,354,663,000	8,638,028	192,119,000	3,269,000	7.05	2.02
1965	1,504,444,000	6,766,782	194,583,000	4,250,000	7.73	1.59
1966	1,452,665,000	11,668,486	196,842,000	4,366,672	7.38	2.67
10 Year Avg.	\$1,226,706,000	\$12,827,148	183,466,000	4,119,700	\$6.63	\$3.14

1. Source: National Board of Fire Underwriters' Loss Statistics up to 1964 -- thereafter, Insurance Information Institute
2. Source: Bureau of Census
3. Source: Civil Service Commission & Department of Defense -- Includes civilian employees and military personnel but excludes dependants.

APPENDIX B

DEATHS FROM BUILDING FIRES ON FEDERAL PROPERTY - U. S. ONLY (THE 50 STATES & D. C.)

TEN YEAR EXPERIENCE COMPARISON

FISCAL YEARS 1957 TO 1966

TABLE XII

Fiscal Year	DEATHS FROM FIRE			DEATHS BY FIRE CATEGORIES							
	Total Deaths	Adults Killed	Children Killed	Smoking Materials	Children with Matches	Flammable Liquids	Electrical	Heating and Cooking	Other Known	Unknown	
1957	14	10	4	8	-	4	-	-	-	2	
1958	23	14	9	7	-	2	-	-	12	2	
1959	16	9	7	4	2	6	1	-	3	-	
1960	25	18	7	9	4	5	1	1	5	-	
1961	34	25	9	14	-	3	2	2	13	-	
1962	33	26	7	6	2	2	5	1	14	3	
1963	16	11	5	10	-	4	-	-	2	-	
1964	23	16	7	6	-	5	-	3	3	6	
1965	31	21	10	7	1	3	-	1	17	2	
1966	81	66	15	6	11	1	-	5	56	2	
Total	296	216	80	77	20	35	9	13	125	17	
10 Year Avg.	30	22	8								

NOTE: Individuals are classified as children if they are 15 years of age or less.

APPENDIX C

RECAPITULATION OF FIRE LOSSES

AEROSPACE VEHICLE FIRES
FY 1966 - BY CATEGORIES

WORLDWIDE

TABLE XIII

CATEGORY	No. of Fires	% of Fires	Amount of Loss	Injuries	Deaths
TOTALS	466	100.00	\$198,321,257	205	208
Flight Static	11	2.36	\$ 662,590	3	-
Flight Taxi	18	3.86	711,726	11	3
Flight Take-Off	64	13.73	25,042,240	81	80
Flight Inflight	178	38.20	107,990,014	74	90
Flight Landing	132	28.33	50,785,613	32	35
Non-Flight Refueling/Defuel.	8	1.72	2,894,260	1	-
Non-Flight Preflight Main.	17	3.65	3,526,450	2	-
Non-Flight Starting Engines	38	8.15	6,708,364	1	-
Non-Flight Taxi/Other	-	-	-	-	-

BUILDINGS AND CONTENTS FIRES
FY 1966 - BY CATEGORIES

TABLE XIV

WORLDWIDE

CATEGORY	No. of Fires	% of Fires	Amount of Loss	Injuries	Deaths
TOTALS	6,735	100.00	\$15,906,992	408	95
Electricity	1,364	20.25	\$ 3,355,264	68	12
Explosion	85	1.28	95,591	5	-
Exposure	15	0.22	18,091	-	-
Flammable Liquids	268	3.98	988,954	63	1
Incendiarism	253	3.75	431,663	14	-
Lightning with Fire Ensuing	32	0.47	588,658	-	-
Matches and Smoking	2,569	38.14	684,000	110	17
Open Flames, Welding, and Torches	269	3.99	4,237,133	29	55
Overheated Grease, Tar, or Wax	237	3.53	369,126	11	4
Spontaneous Ignition	86	1.28	61,929	3	-
Stoves, Furnaces, and Boilers	349	5.18	1,115,872	23	2
Not Elsewhere Classified	542	8.05	1,481,957	32	1
Undetermined	666	9.89	2,478,754	50	3

APPENDIX C (CON.)

CONTRACTOR'S CUSTODY FIRES

FY 1966 - BY CATEGORIES

TABLE XV

WORLDWIDE

CATEGORY	No. of Fires	% of Fires	Amount of Loss	Injuries	Deaths
TOTALS	269	100.00	\$ 2,295,597	15	7
Electricity	125	46.47	\$ 150,438	-	2
Explosion	11	4.09	352,725	3	3
Exposure	1	0.37	1,506	-	-
Flammable Liquids	11	4.09	2,579	1	-
Incendiarism	1	0.37	53,580	-	-
Lightning with Fire Ensuing	1	0.37	80	-	-
Matches and Smoking	15	5.58	1,861	-	-
Open Flames, Welding, and Torches	33	12.27	25,110	1	1
Overheated Grease, Tar, or Wax	5	1.86	290	-	-
Spontaneous Ignition	14	5.20	1,481,740	7	1
Stoves, Furnaces, and Boilers	14	5.20	120,824	3	-
Not Elsewhere Classified	21	7.81	36,212	-	-
Undetermined	17	6.32	68,652	-	-

FOREST, GRASS, AND TUNDRA FIRES

CALENDAR YEAR 1965* - BY CATEGORIES

TABLE XVI

WORLDWIDE

CATEGORY	No. of Fires	% of Fires	Amount of Loss**	Injuries	Deaths
TOTALS	9,845	100.00	\$17,661,115	672	7
Lightning	5,825	59.17	\$ 2,742,870	-	-
Equipment	331	3.36	142,437	-	-
Smoking	974	9.89	226,305	-	-
Recreation	973	9.88	79,545	-	-
Forest Utilization	233	2.37	1,589,626	-	-
Land Occupancy	525	5.33	165,083	-	-
Incendiary	529	5.38	142,531	-	-
Miscellaneous	455	4.62	12,572,718	672	7

*Majority of losses are for Calendar Year 1965 to make maximum use of agency reporting procedures.

**Does not include fire suppression costs.

APPENDIX C (CON.)
SHIPBOARD FIRES
FY 1966 - BY CATEGORIES

WORLDWIDE

TABLE XVII

CATEGORY	No. of Fires	% of Fires	Amount of Loss	Injuries	Deaths
TOTALS	23	100.00	\$ 14,969	44	5
Electricity	4	17.39	\$ 1,300	-	-
Explosion	1	4.35	-	-	-
Exposure	-	-	-	-	-
Flammable Liquids	6	26.08	2,818	44	2
Incendiarism	-	-	-	-	-
Lightning with Fire Ensuing	-	-	-	-	-
Matches and Smoking	2	8.70	10,000	-	-
Open Flames, Welding, and Torches	4	17.39	851	-	1
Overheated Grease, Tar, or Wax	-	-	-	-	-
Spontaneous Ignition	1	4.35	-	-	-
Stoves, Furnaces, and Boilers	-	-	-	-	-
Not Elsewhere Classified	1	4.35	-	-	-
Undetermined	4	17.39	-	-	2

OTHER FIRES
FY 1966 - BY CATEGORIES

WORLDWIDE

TABLE XVIII

CATEGORY	No. of Fires	% of Fires	Amount of Loss	Injuries	Deaths
TOTALS	784	100.00	\$1,167,577	108	1
Electricity	126	16.07	\$ 361,309	3	-
Explosion	7	0.89	513	2	-
Exposure	3	0.38	3,176	-	-
Flammable Liquids	266	33.93	456,929	29	-
Incendiarism	23	2.94	4,045	-	-
Lightning with Fire Ensuing	10	1.28	3,552	1	-
Matches and Smoking	102	13.01	10,754	4	-
Open Flames, Welding, and Torches	19	2.42	9,577	1	-
Overheated Grease, Tar, or Wax	11	1.40	264	-	-
Spontaneous Ignition	7	0.89	347	-	-
Stoves, Furnaces, and Boilers	14	1.79	22,601	1	-
Not Elsewhere Classified	167	21.30	213,542	7	-
Undetermined	29	3.70	80,968	60	1

APPENDIX D

TABLE XIV

CONSOLIDATED FEDERAL LOSS STATISTICS - WORLDWIDE				FISCAL YEAR 1966		FEDERAL FIRE SERVICE REPORT OF FEDERAL FIRE LOSSES					
CATEGORY	AMOUNT OF LOSS			NUMBER OF		AMOUNT OF LOSS				NUMBER OF	
	FIRES (a)	PROPERTY (b)	ALL OTHER (c)	INJURIES (d)	FATALITIES (e)	PROPERTY (f)	ALL OTHER (g)	INJURIES (h)	FATALITIES (i)		
A. AIRCRAFT VEHICLES											
INCIDENT TO FLIGHT	15	109,238	-	-	-	85,750	-	1	-	-	
NOT TO FLIGHT	43	18,531,957	-	9	1	600,688	-	2	2	-	
TOTAL	58	18,641,195	-	9	1	686,438	-	3	2	-	
B. BUILDINGS AND CONTENTS											
1. ELECTRICITY	1,114	1,702,851	901	43	-	1,641,540	-	25	12	-	
2. EXPLOSION	76	29,859	-	3	-	66,082	-	2	-	-	
3. EXPONENTIAL	15	18,091	-	1	-	-	-	-	-	-	
4. FLAMMABLE LIQUIDS	200	175,857	28	44	1	812,868	-	19	-	-	
5. INCARCINATION	226	401,219	128	12	-	30,818	-	2	-	-	
6. LIGHTNING WITH FIRE ENGINES	30	388,628	-	-	-	31	-	-	-	-	
7. MATCHES AND BOLLERS	2,022	568,157	1,160	92	17	112,857	-	18	-	-	
8. OPEN FLAMES, BELGINS AND TOUCHES	211	450,893	3,777,509	15	55	8,750	-	14	-	-	
9. OVERHEATED BRGNS, TAG OR SAG	173	131,017	20,000	9	4	18,109	-	2	-	-	
10. SPONTANEOUS IGNITION	71	21,937	-	1	-	39,692	-	-	-	-	
11. STORES, FURNACES AND BOLLERS	257	357,777	500	20	1	752,595	-	1	1	-	
12. NOT ELEMENTS CLASSIFIED	462	1,651,018	36	3	73	28,570	-	-	-	-	
13. UNDETERMINED	627	1,708,632	2,938	45	2	707,552	-	5	1	-	
14. TOTAL	5,713	7,866,892	3,805,538	118	81	3,022	8,238,502	90	14	-	
C. CONTRACTOR'S CANTORY											
1. ELECTRICITY	121	157,436	2,471	2	2	533	-	-	-	-	
2. EXPLOSION	11	36,724	-	3	1	-	-	-	-	-	
3. EXPONENTIAL	1	1,206	-	-	-	-	-	-	-	-	
4. FLAMMABLE LIQUIDS	13	2,575	-	1	-	-	-	-	-	-	
5. INCARCINATION	1	51,580	-	-	-	-	-	-	-	-	
6. LIGHTNING WITH FIRE ENGINES	1	80	-	-	-	-	-	-	-	-	
7. MATCHES AND BOLLERS	12	1,864	-	-	-	-	-	-	-	-	
8. OPEN FLAMES, BELGINS AND TOUCHES	32	21,850	250	1	1	1,000	-	-	-	-	
9. OVERHEATED BRGNS, TAG OR SAG	5	180	100	-	-	-	-	-	-	-	
10. SPONTANEOUS IGNITION	14	1,061,750	-	7	1	-	-	-	-	-	
11. STORES, FURNACES AND BOLLERS	11	107,888	-	2	-	33,596	-	1	-	-	
12. NOT ELEMENTS CLASSIFIED	19	27,659	8,200	-	-	81	-	-	-	-	
13. UNDETERMINED	17	68,631	-	-	-	-	-	-	-	-	
14. TOTAL	261	2,267,085	31,021	15	7	17,322	-	1	-	-	
D. FOREST, GRASS AND TURF											
PROPERTY OF (Check)											
<input type="checkbox"/> FEDERAL	5,822	908,626	1,810,389	-	-	-	-	-	-	-	
<input type="checkbox"/> STATE	310	17,872	128,569	-	-	-	-	-	-	-	
<input type="checkbox"/> LOCAL	851	51,669	188,618	-	-	18	-	-	-	-	
<input type="checkbox"/> PRIVATE	964	28,506	55,038	-	-	9	-	-	-	-	
TOTAL	2,133	1,488,757	3,182,614	-	-	36	-	-	-	-	
E. SHIPBOARD											
1. ELECTRICITY	1	-	-	-	-	1,300	-	-	-	-	
2. EXPLOSION	-	-	-	-	-	-	-	-	-	-	
3. EXPONENTIAL	-	-	-	-	-	-	-	-	-	-	
4. FLAMMABLE LIQUIDS	-	-	-	-	-	2,818	-	4	-	-	
5. INCARCINATION	-	-	-	-	-	-	-	-	-	-	
6. LIGHTNING WITH FIRE ENGINES	-	-	-	-	-	-	-	-	-	-	
7. MATCHES AND BOLLERS	-	-	-	-	-	-	-	-	-	-	
8. OPEN FLAMES, BELGINS AND TOUCHES	3	351	-	1	1	10,000	-	-	-	-	
9. OVERHEATED BRGNS, TAG OR SAG	-	-	-	-	-	-	-	-	-	-	
10. SPONTANEOUS IGNITION	-	-	-	-	-	-	-	-	-	-	
11. STORES, FURNACES AND BOLLERS	-	-	-	-	-	-	-	-	-	-	
12. NOT ELEMENTS CLASSIFIED	-	-	-	-	-	-	-	-	-	-	
13. UNDETERMINED	2	-	-	-	-	-	-	-	-	-	
14. TOTAL	6	351	-	1	1	11,118	-	4	-	-	
F. OTHER											
1. ELECTRICITY	69	162,277	-	-	27	198,740	-	-	-	-	
2. EXPLOSION	4	469	-	2	-	55	-	-	-	-	
3. EXPONENTIAL	2	2,256	-	1	-	220	-	-	-	-	
4. FLAMMABLE LIQUIDS	161	169,188	30,374	14	108	251,859	1,928	11	-	-	
5. INCARCINATION	15	174	-	-	-	87	-	-	-	-	
6. LIGHTNING WITH FIRE ENGINES	9	3,085	35	1	-	1,871	-	-	-	-	
7. MATCHES AND BOLLERS	54	7,551	-	4	48	1,875	-	-	-	-	
8. OPEN FLAMES, BELGINS AND TOUCHES	7	7,123	-	-	-	1,404	-	-	-	-	
9. OVERHEATED BRGNS, TAG OR SAG	2	121	-	9	-	161	-	-	-	-	
10. SPONTANEOUS IGNITION	2	159	-	2	-	84	-	-	-	-	
11. STORES, FURNACES AND BOLLERS	8	7,823	-	1	-	11,728	-	-	-	-	
12. NOT ELEMENTS CLASSIFIED	112	117,359	763	1	52	95,221	-	-	-	-	
13. UNDETERMINED	32	18,014	59,347	60	7	24,807	-	-	-	-	
14. TOTAL	470	498,048	93,626	81	1	573,765	1,928	12	-	-	
GRAND TOTAL	26,463	152,321,435	38,964,548	1,205	205	1,719	64,176,607	1,408	247	11	

Prepared by (Typed name and signature) *V. L. Hanbury, Staff Director, Federal Fire Council* Date 2-11-67
 Checked (Signature of head of agency or division) _____ Date _____
 PFC Form 9

APPENDIX E

FLIGHT HOURS IN FOREST FIRE PROTECTION

The U. S. Department of Agriculture, Forest Service and U. S. Department of the Interior agencies have utilized aircraft for a number of years in fire protection work. Some aircraft are used to drop fire retardants, others to transport smoke-jumpers and firefighters. Lighter aircraft supplement detection systems, act as scout planes and lead planes for the air drops. The following tabulation shows combined flight hours for these agencies for the past five calendar years. These include fixed wing planes and helicopters.

TABLE XV Flight Hours in Forest Fire Protection

CALENDAR YEAR	NO. FLIGHT HOURS
1962	47,293
1963	55,899
1964	50,976
1965	50,621
1966	77,519
TOTAL	282,308

In addition to the above, a total of 6,483 parachute jumps were made during calendar year 1966.

APPENDIX F

FOREST FIRE SUPPRESSION COSTS

Forest fire suppression costs were excluded from loss figures shown in Table XV for Fiscal Year 1964 and 1965. These are included in the following table. They are in addition to property losses shown in previous tables.

TABLE XVI Forest Fire Suppression Costs

FISCAL YEAR	COSTS IN DOLLARS
1962	\$39,687,000
1963	32,353,370
1964	20,500,000
1965	22,796,868
1966	25,520,010

APPENDIX G

COMPARISON OF AVERAGE FIRE LOSSES FOR
PROTECTED AND UNPROTECTED OCCUPANCIES

The following is a tabulation of fire loss experience for protected and unprotected properties of one Federal agency for Fiscal Years 1946 through 1966. All automatic sprinkler and automatic fire alarm systems referenced operated satisfactorily. There was no duplication of reporting the operation of two systems on any one fire; deluge systems were considered as automatic sprinkler systems. The fires all occurred within the confines of the continental 48 states and the District of Columbia.

TABLE XVII	AUTOMATIC SPRINKLERS		AUTOMATIC FIRE ALARMS		NO INSTALLED FIRE PROTECTION		AVERAGE LOSS PER FIRE			
	No. of Fires	Monetary Loss	No. of Fires	Monetary Loss	No. of Fires	Monetary Loss	Automatic Sprinklers	Automatic Fire Alarms	No. Installed Protection	
GRAND TOTAL OF ALL 11 SELECTED OCCUPANCIES	348	\$715,485	132	\$1,522,124	1,319	\$28,392,646	\$2,056	\$11,531	\$ 21,526	
Warehouses (15,000 sq. ft. or more)	77	119,205	17	851,216	64	9,846,400	1,548	50,072	153,850	
Warehouses (under 15,000 sq. ft.)	11	3,027	21	406,491	385	3,645,505	275	19,357	9,469	
Open Warehouses	-	-	-	-	12	1,589,243	-	-	144,185	
Post Buildings	7	3,594	-	-	5	4,617,797	513	-	923,559	
Chemical Mfg.	5	910	-	-	124	257,045	182	-	2,073	
Laundries & Dry Cleaning	43	16,781	-	-	23	108,023	390	-	4,697	
Shops	42	56,858	3	2,606	360	4,681,910	1,354	869	13,005	
Hospital Wards	63	3,912	18	12,224	33	9,255	62	679	280	
Other Medical Bldgs.	14	5,724	14	68,928	77	331,655	409	4,923	4,307	
Dormitory Type Living Quarters	3	237	57	154,961	131	316,519	79	2,719	2,416	
Ordinance Mfg.	83	505,237	2	25,698	105	2,989,294	6,087	12,849	28,469	